

FIG.3

Day 7



Day 14



Day 21

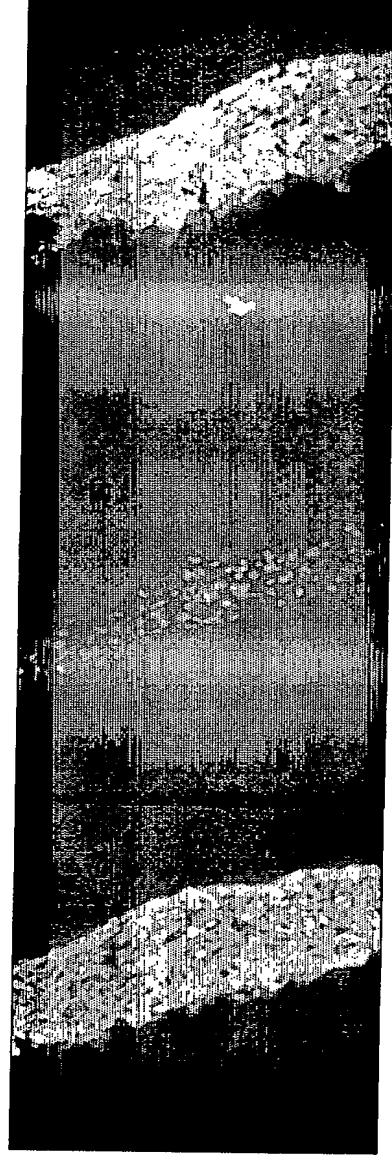


(1x10⁶cell/ cm²Asc-2P 1mM)

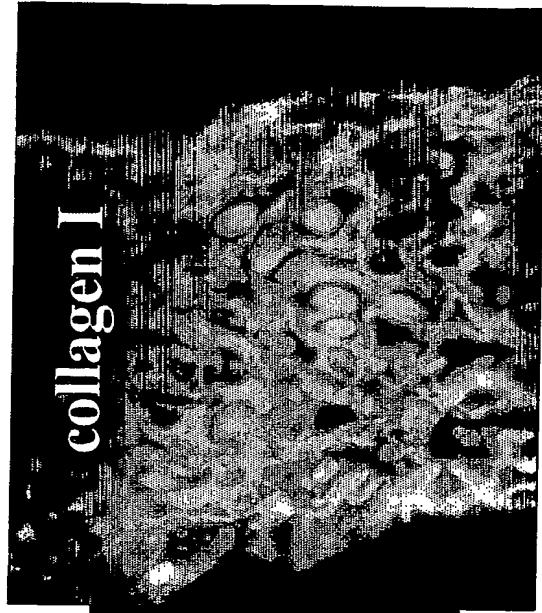
Day 1 It is difficult to detach cell sheet

FIG.4

collagen I collagen II collagen III



collagen I

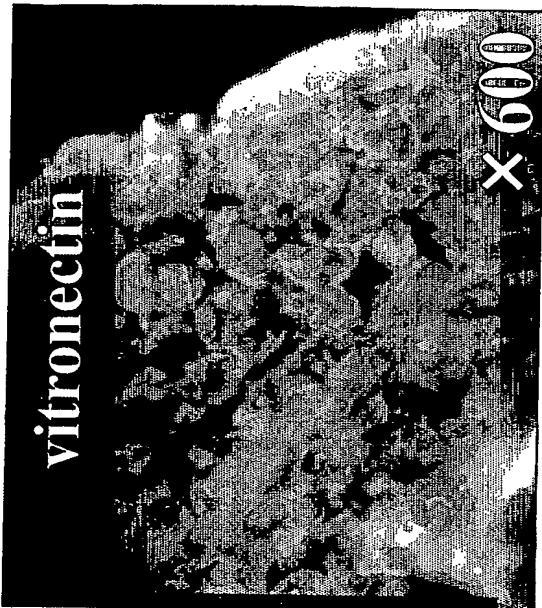


4/46

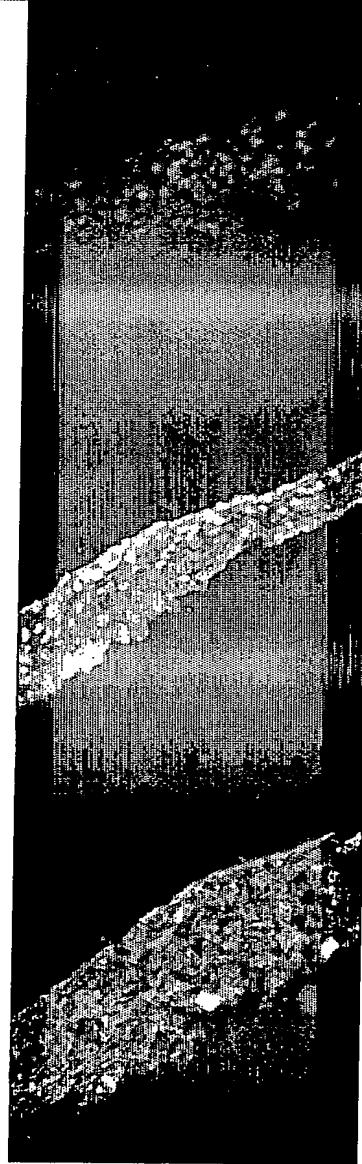
fibronectins

vitronectin

negative
control



vitronectin



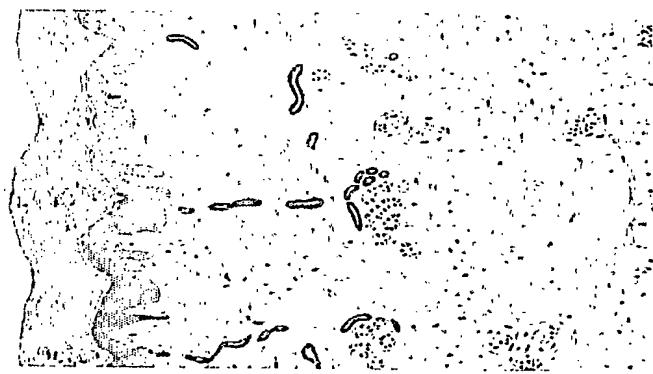
× 600



Normal synovial membrane tissue



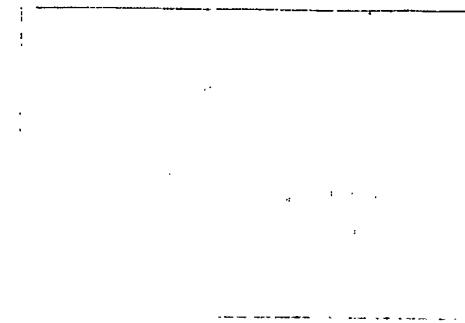
Normal tendon tissue



Normal skin



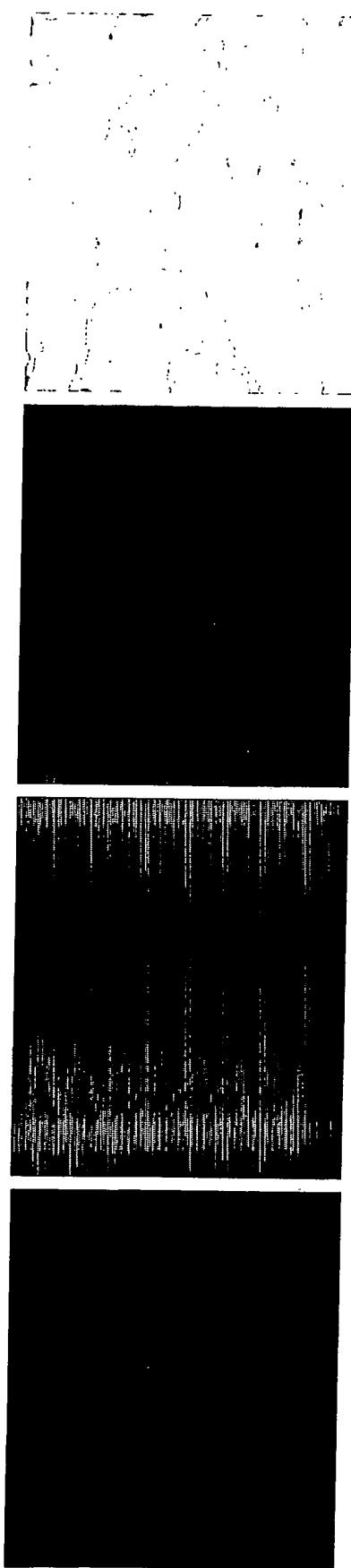
Normal cartilage tissue



Normal meniscus tissue

FIG.5

FIG.6



Vitronectin
fibronectin

Negative
control

HE staining

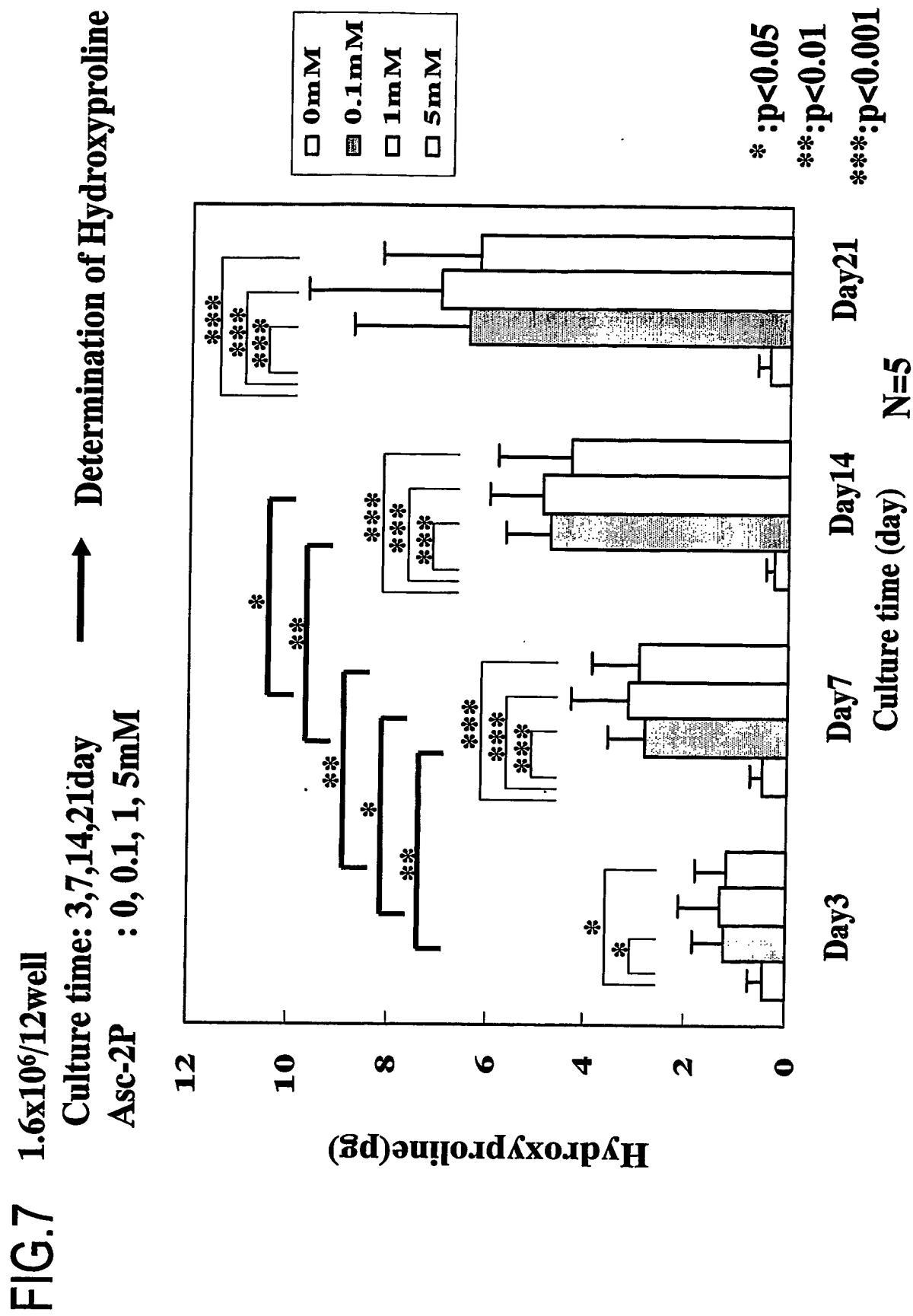


FIG.8

$1.6 \times 10^6/12\text{well}$ $N=5$
Culture time: 3,7,14,21day
Asc-2P : 0,0.1,1,5mM

→ Determination of Hydroxyproline

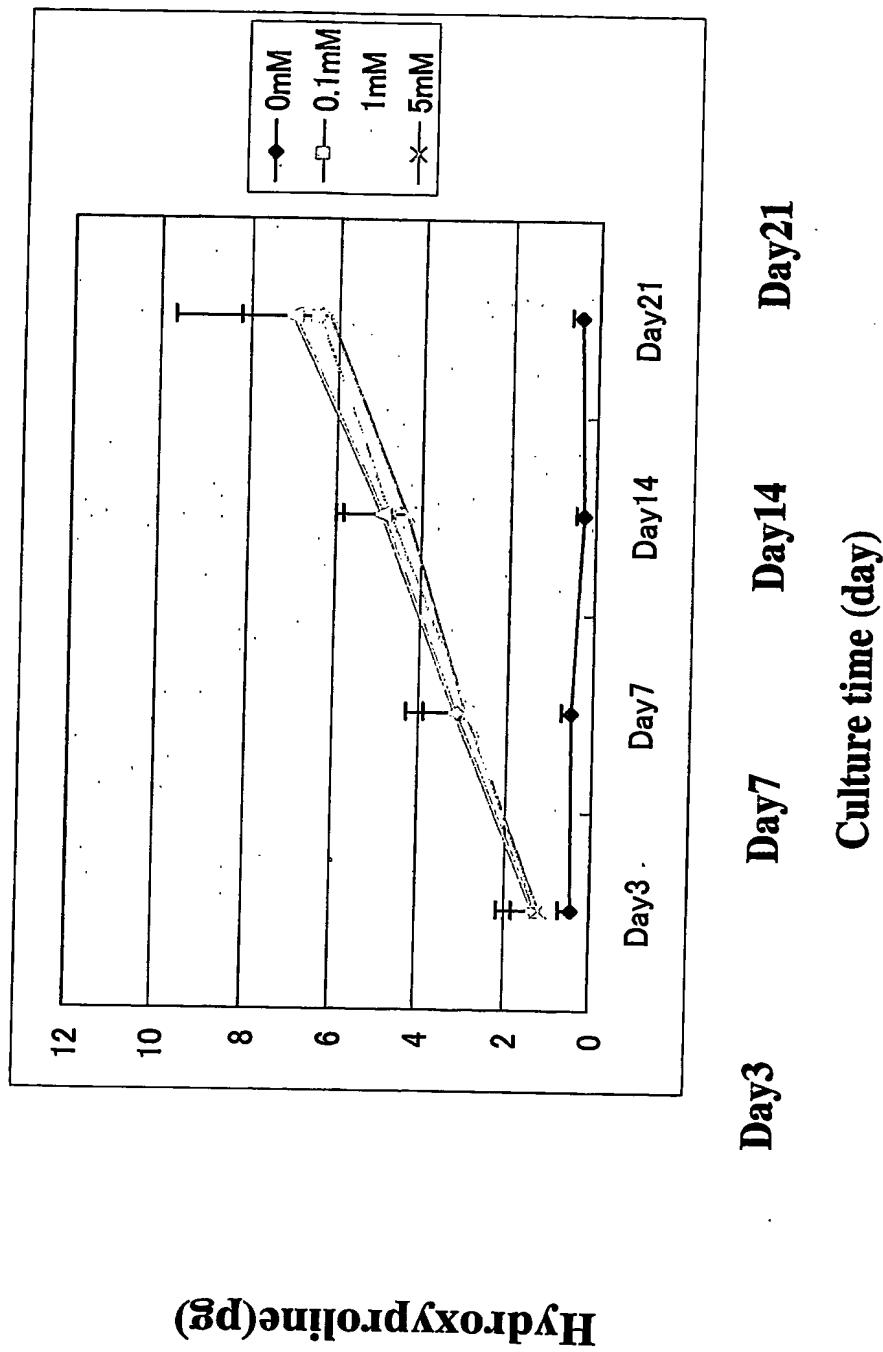


FIG.9

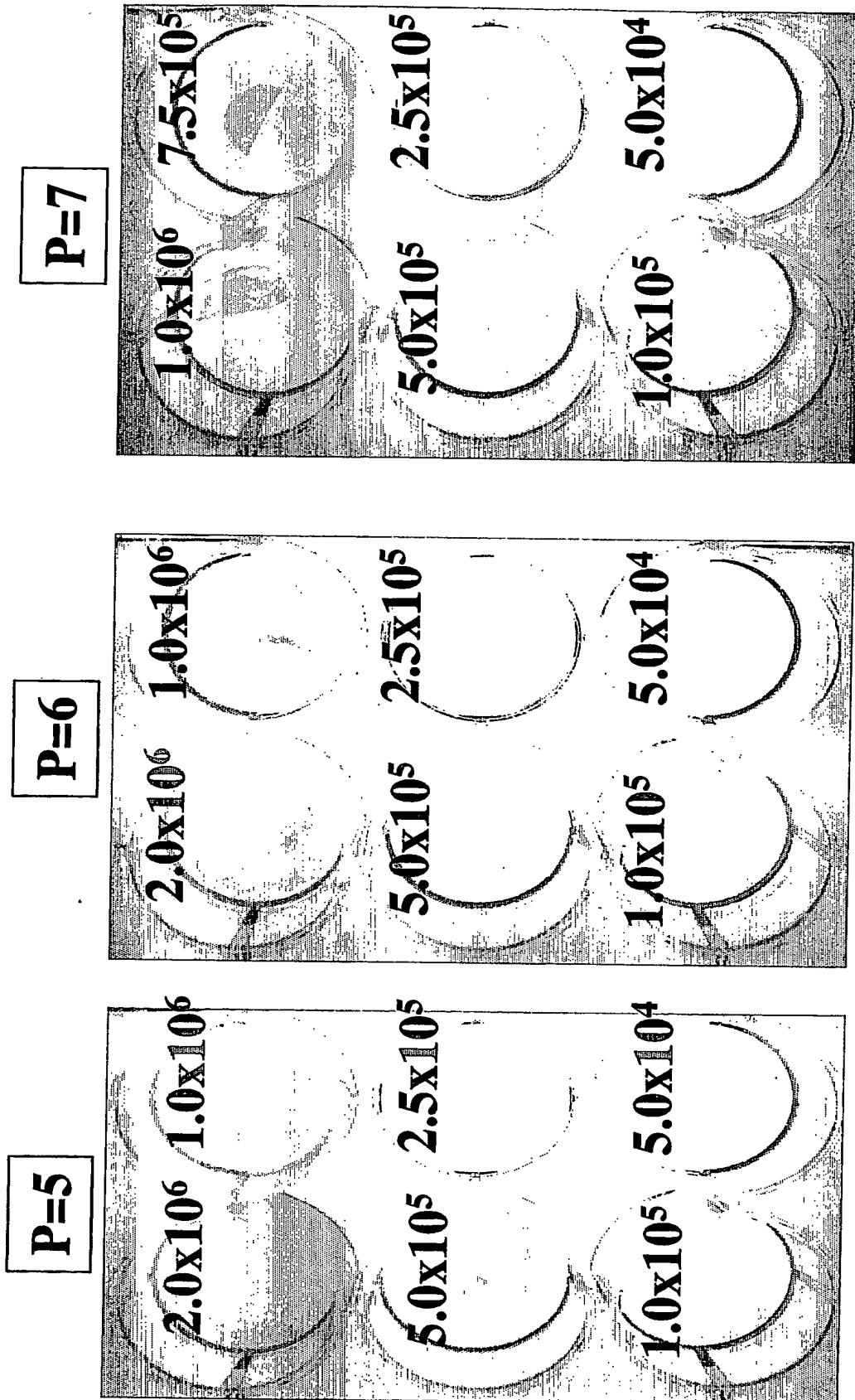


FIG.10

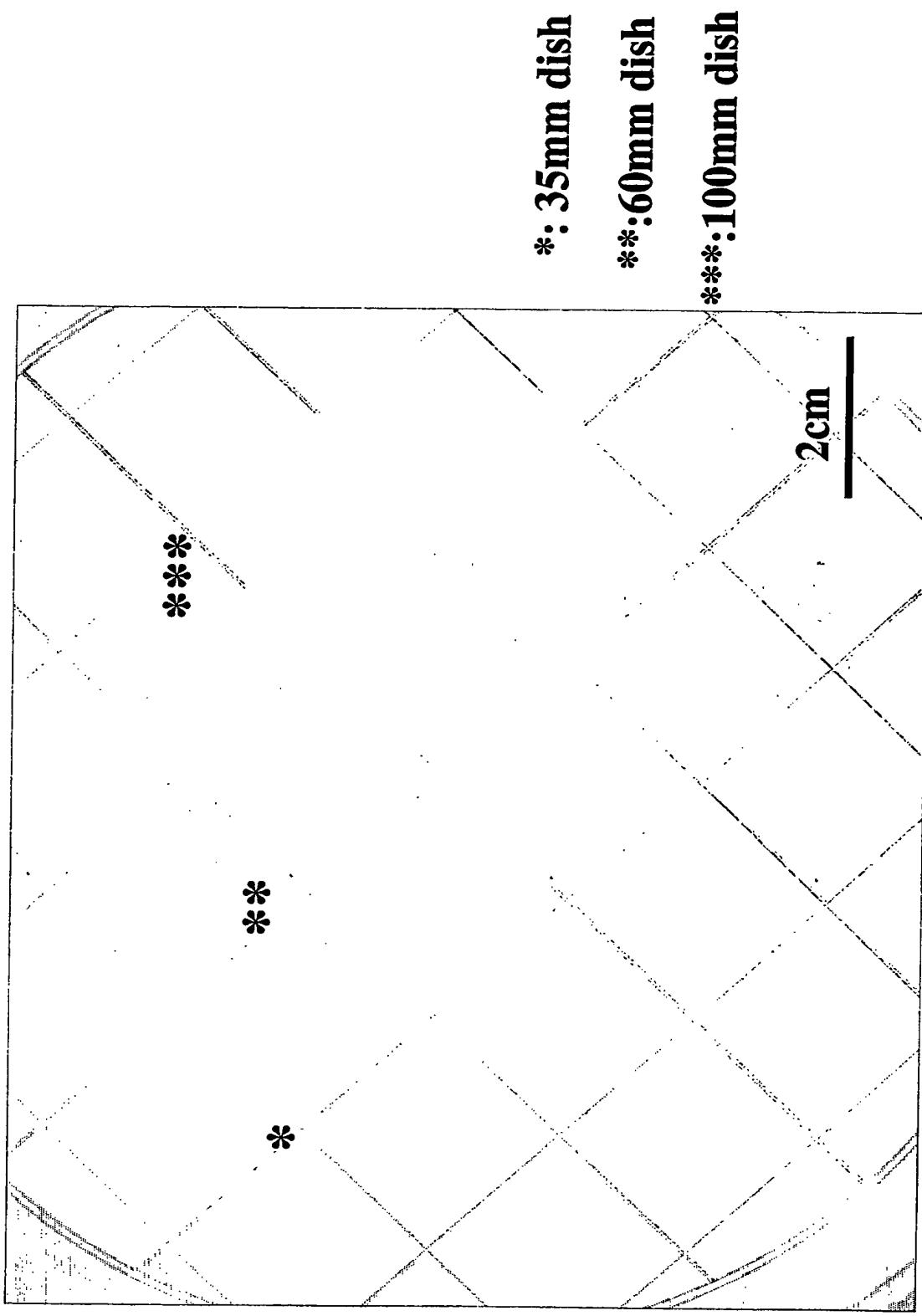


FIG.11

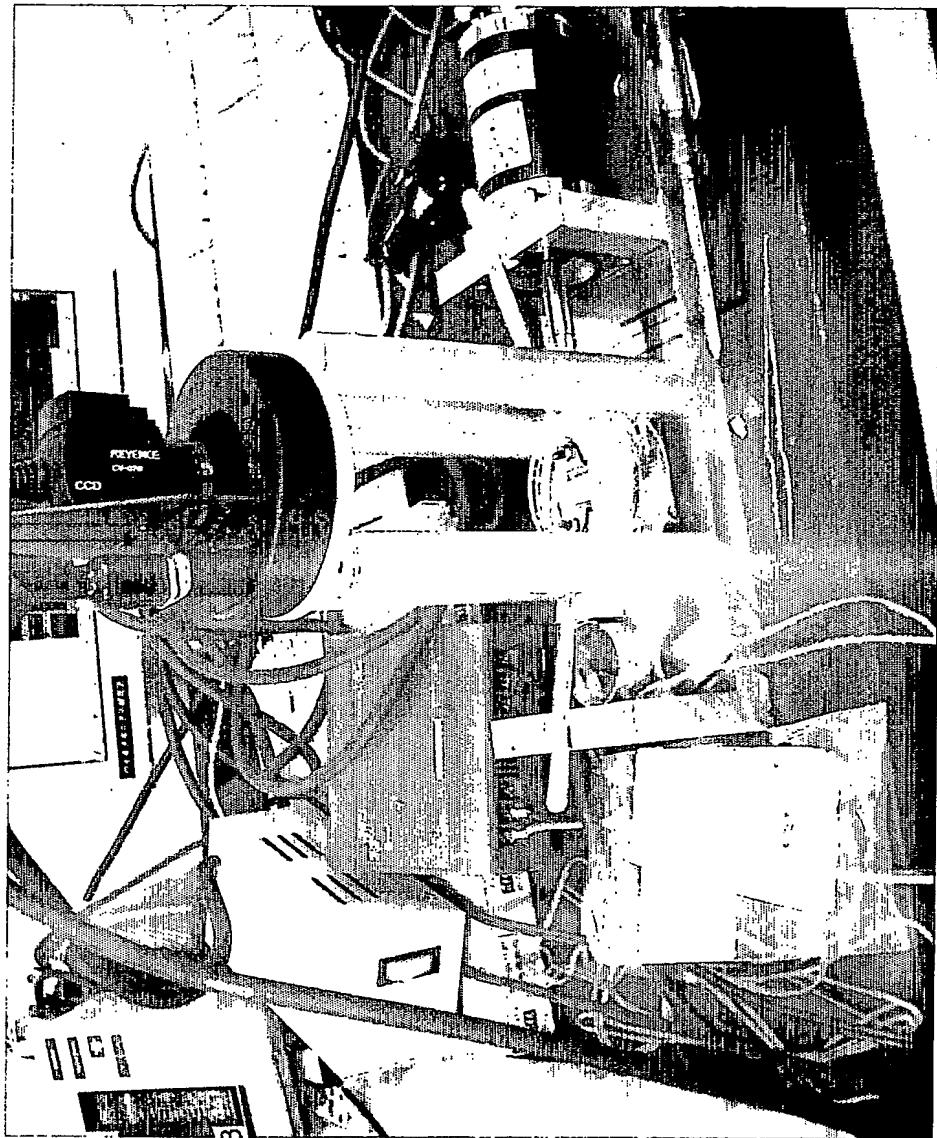


FIG.12

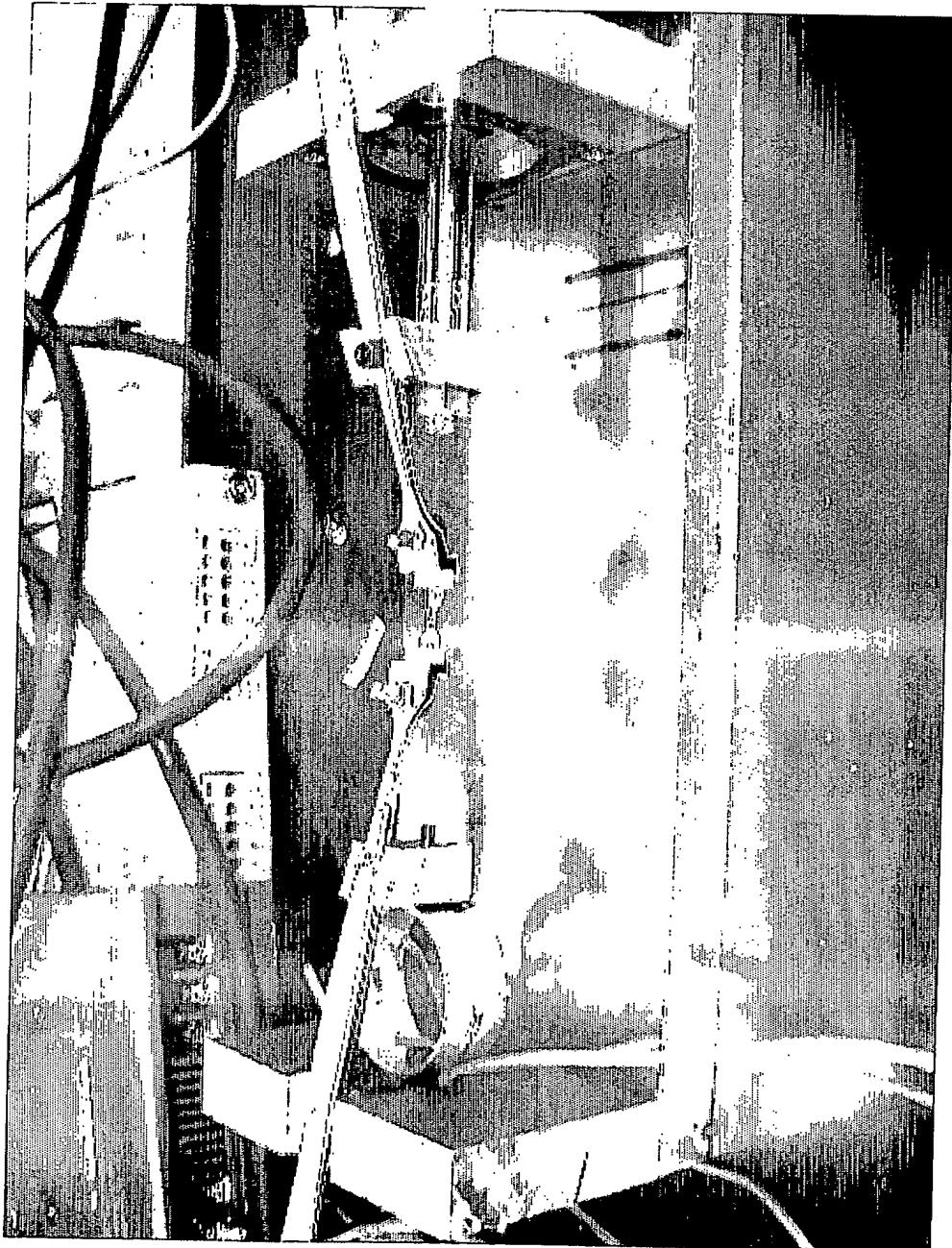
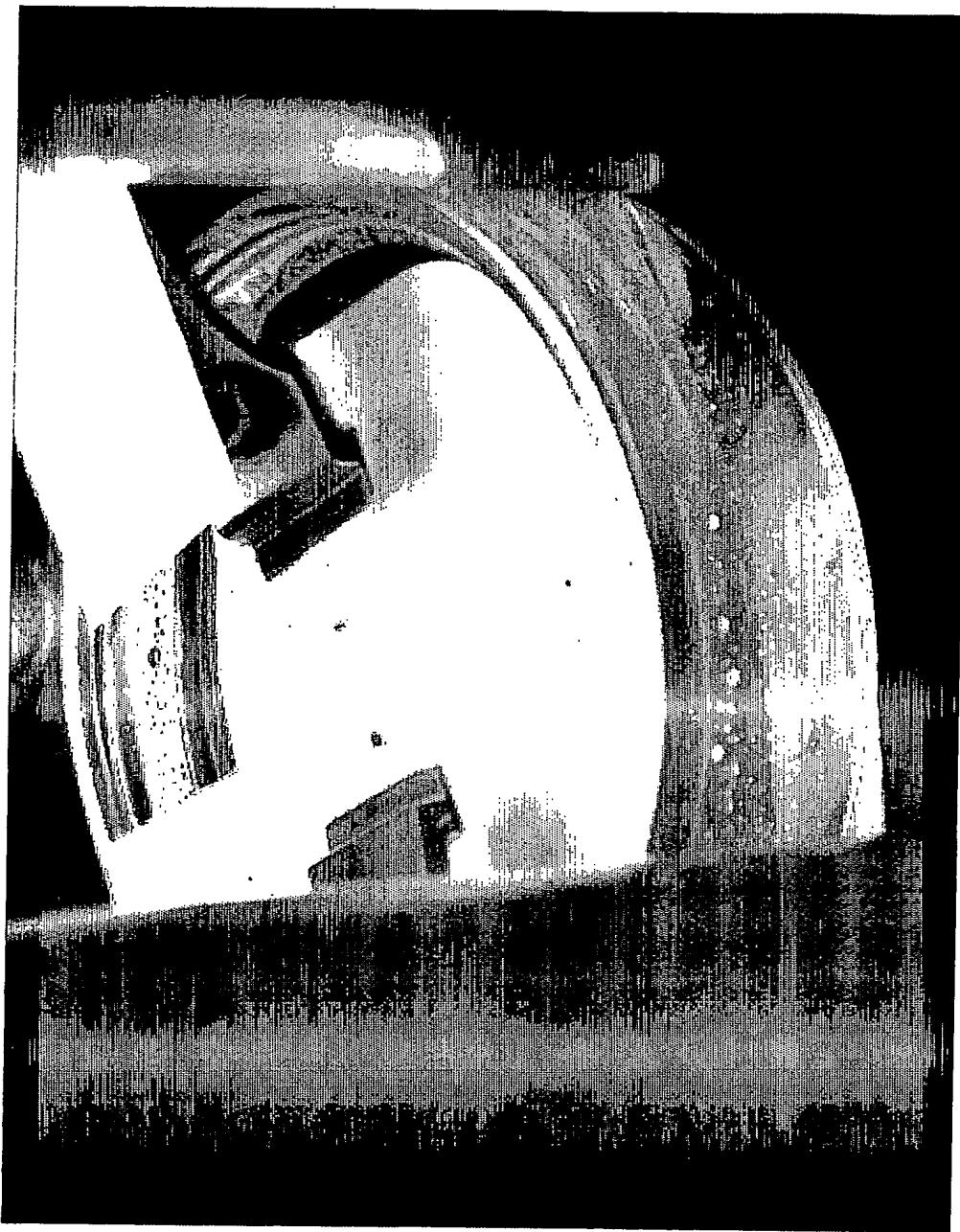


FIG.13



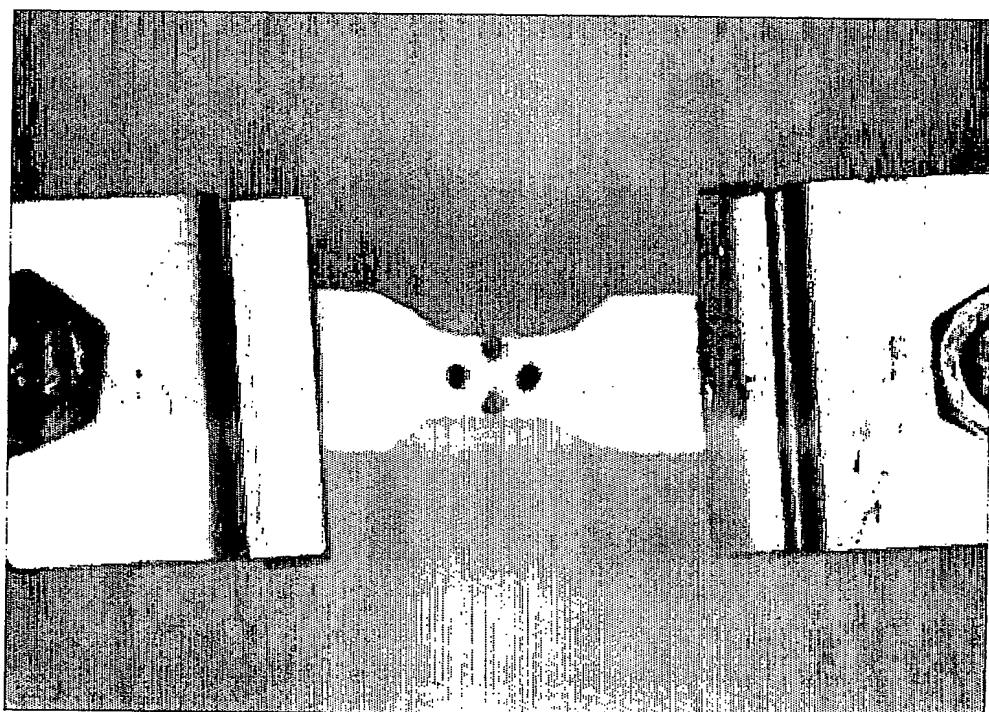


FIG.14

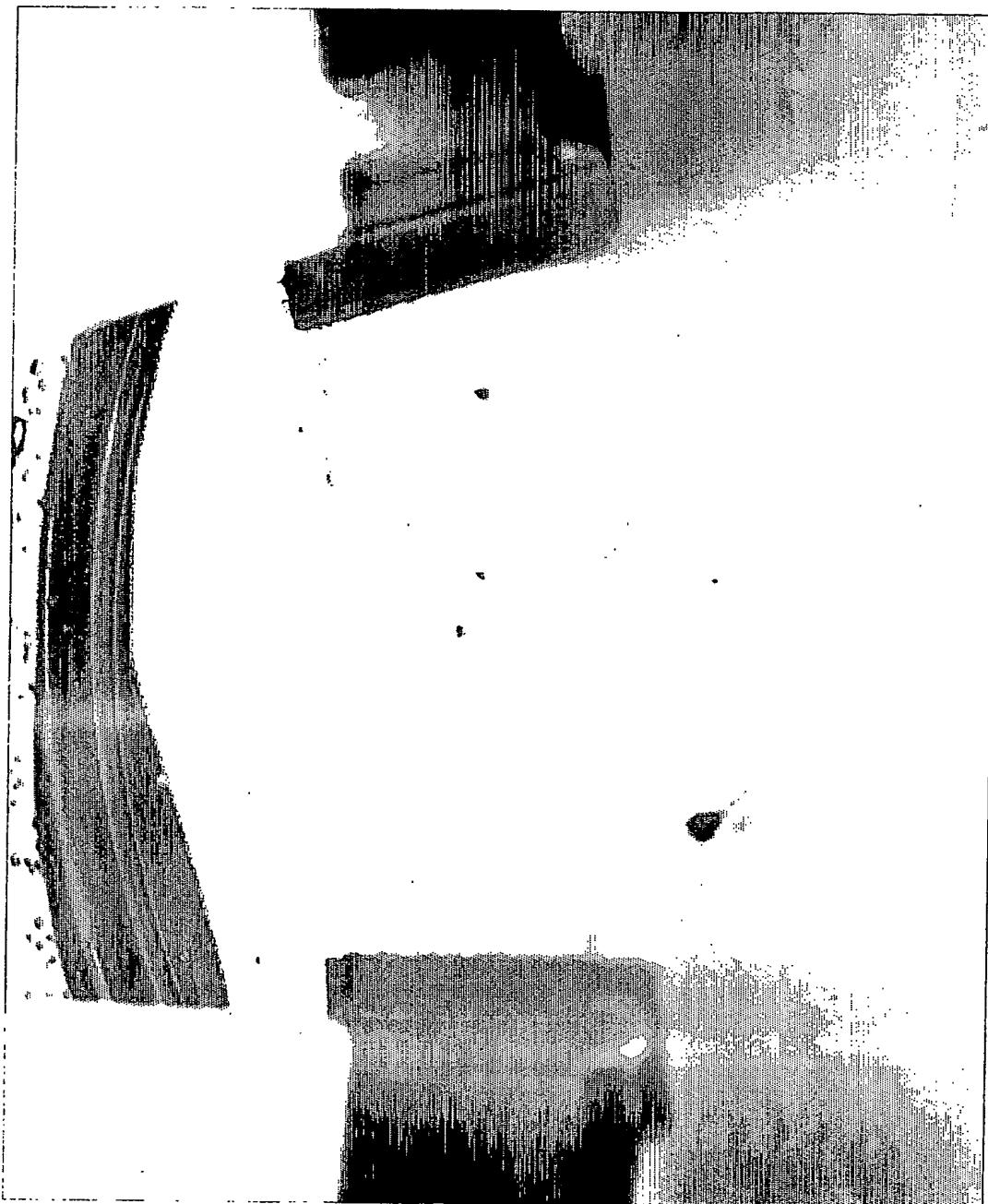
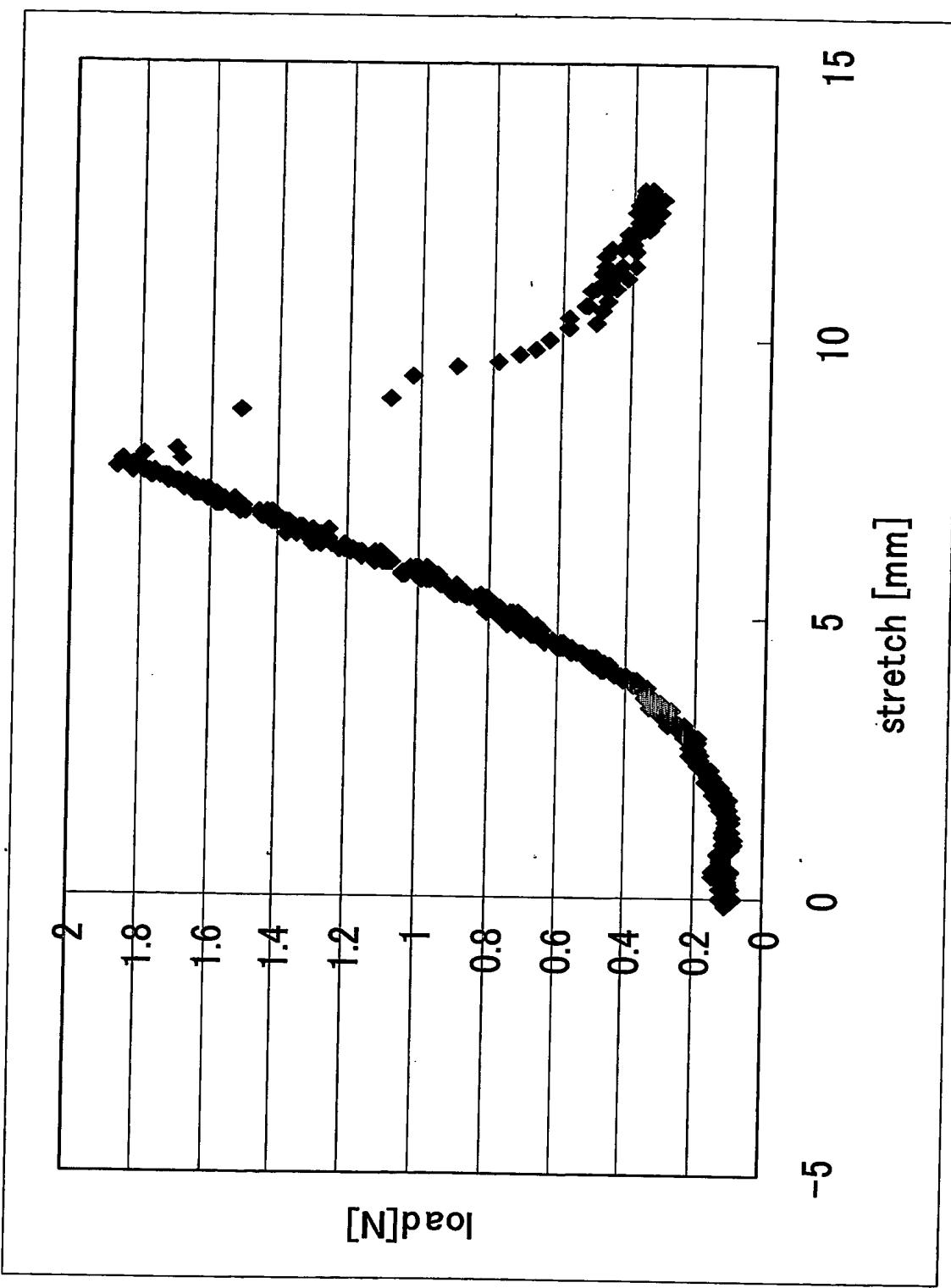


FIG. 15

FIG.16



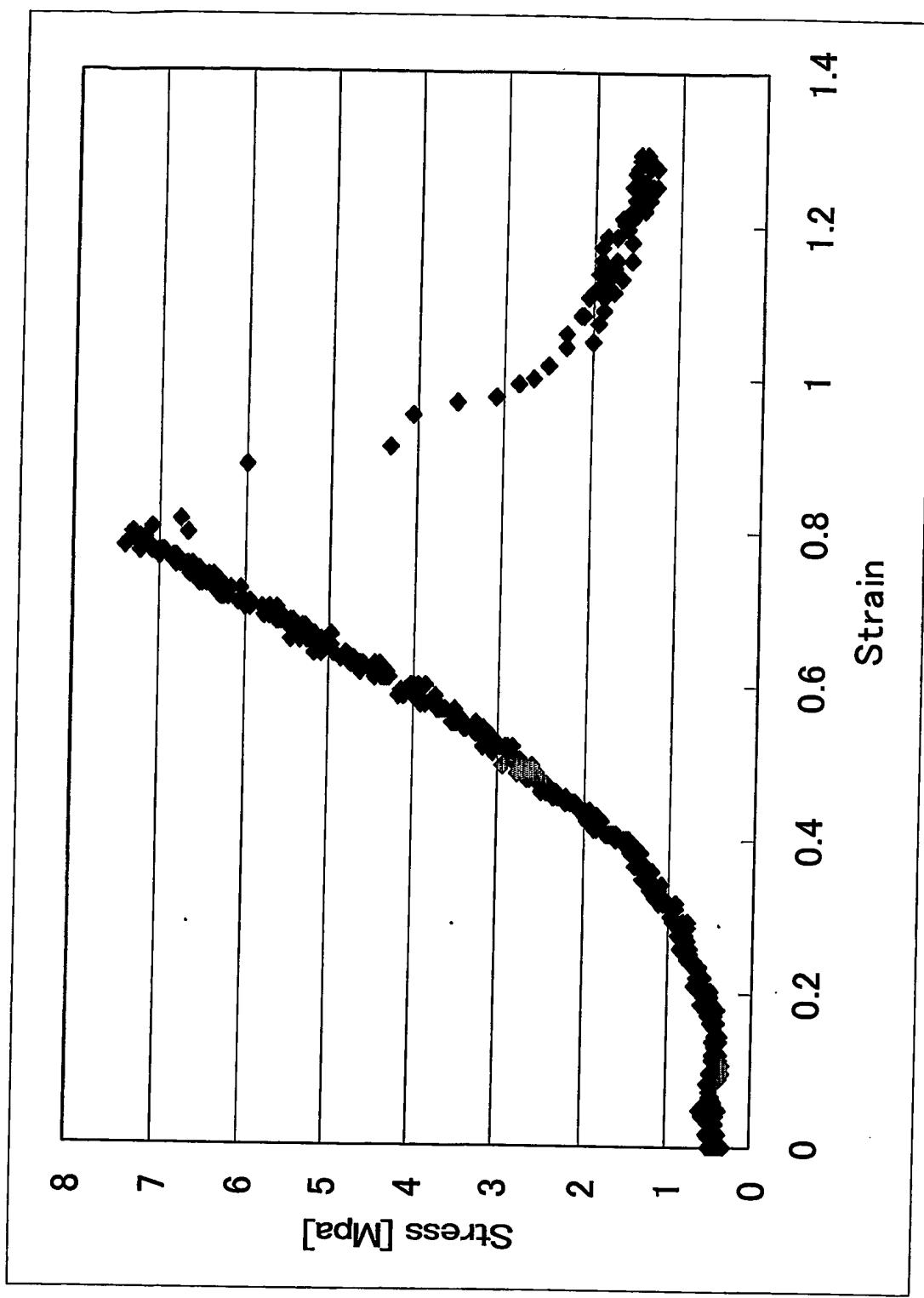


FIG. 17

FIG.18

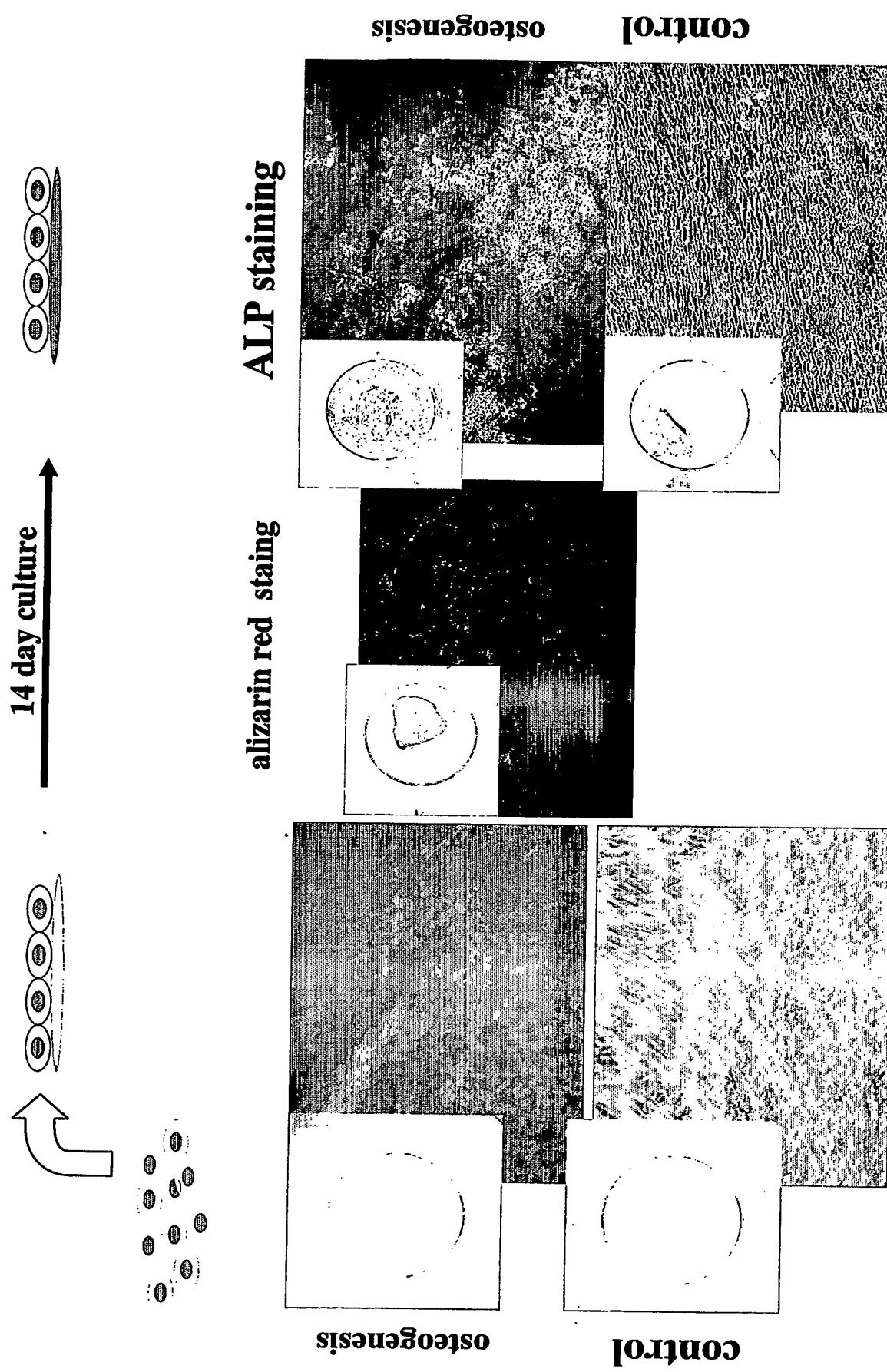


FIG. 19

A) Synthetic tissue

B) monolayer

Culture medium
Chondrogenic
medium
BMP-2
TGF- β

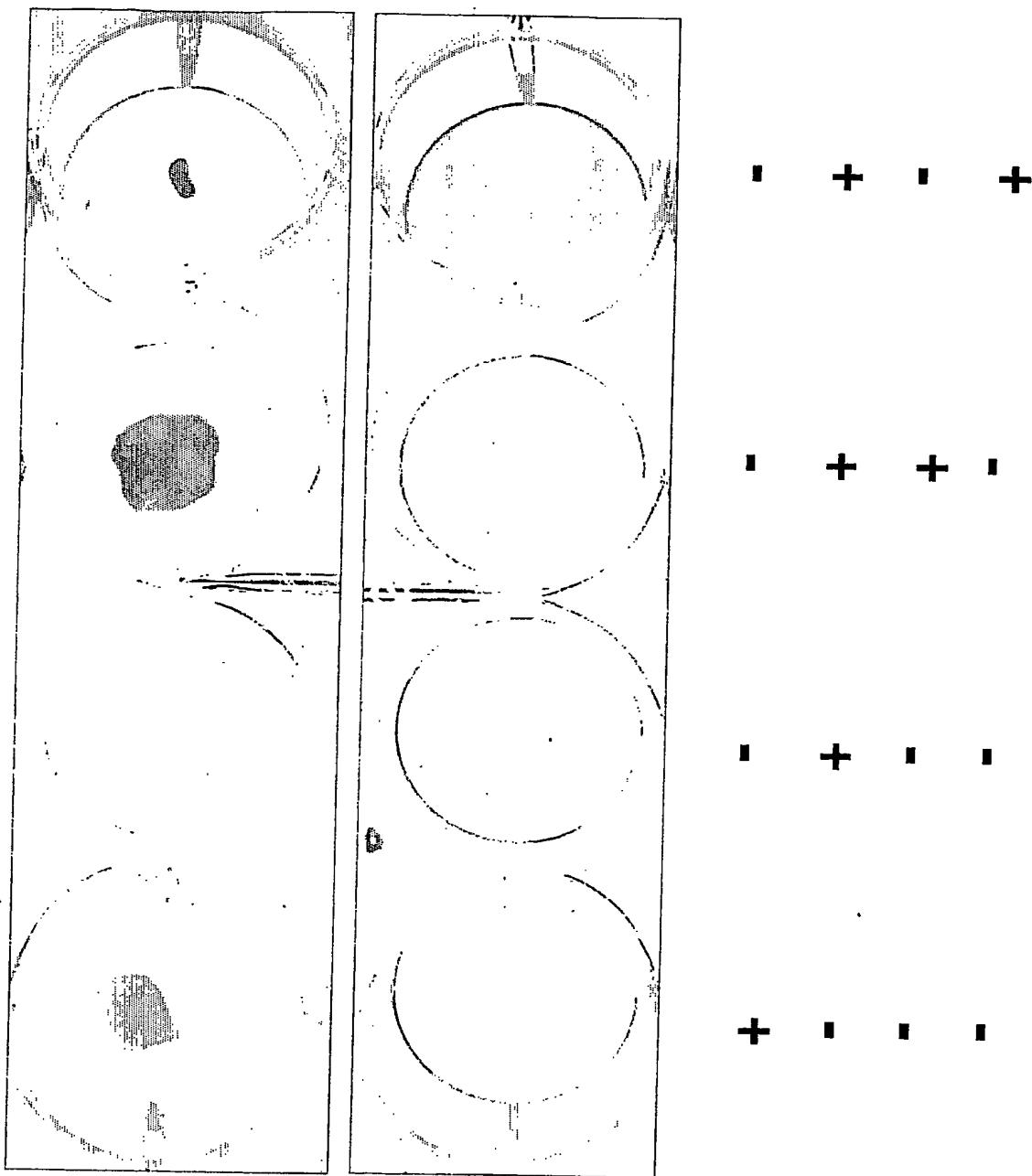


FIG.20

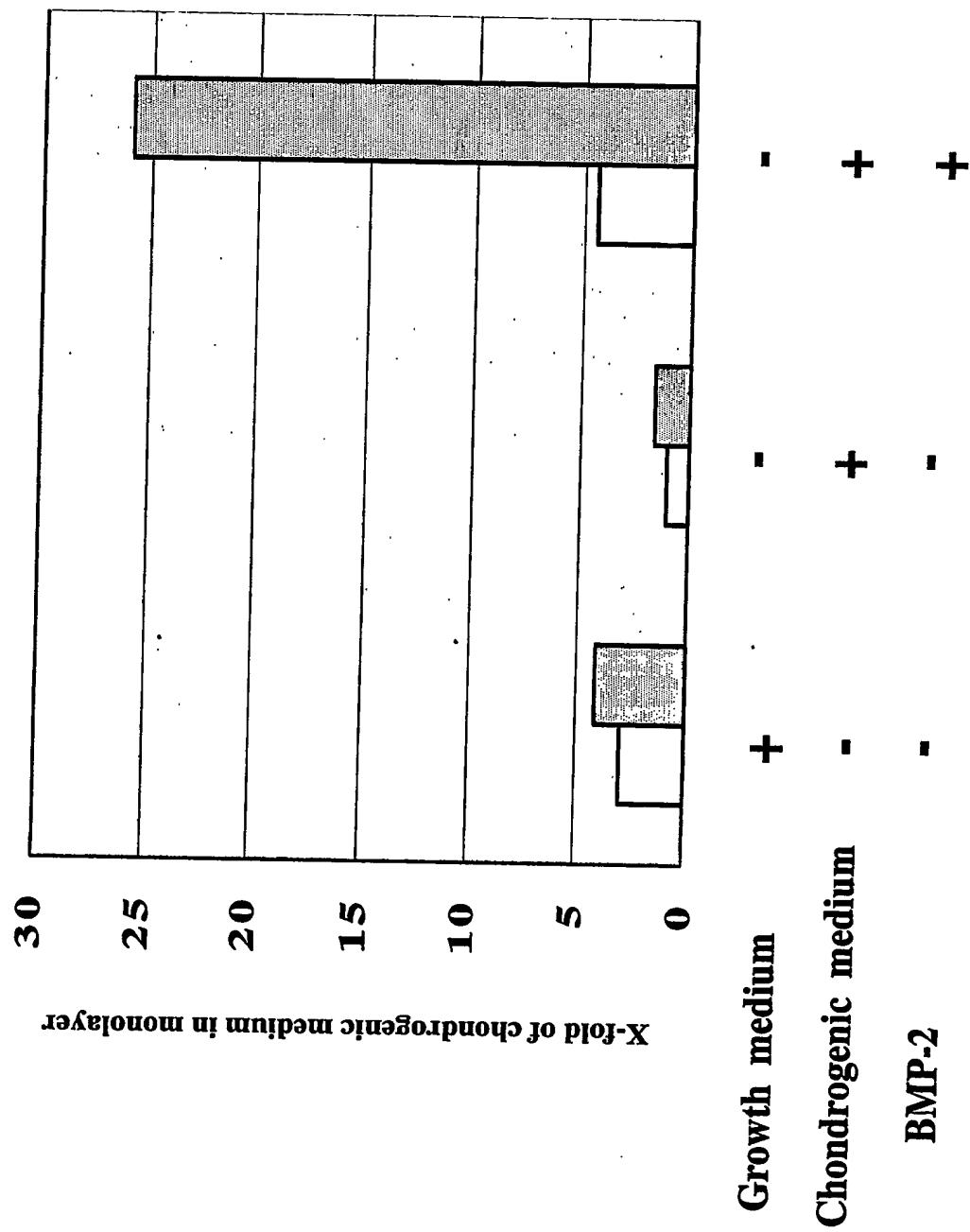


FIG.21

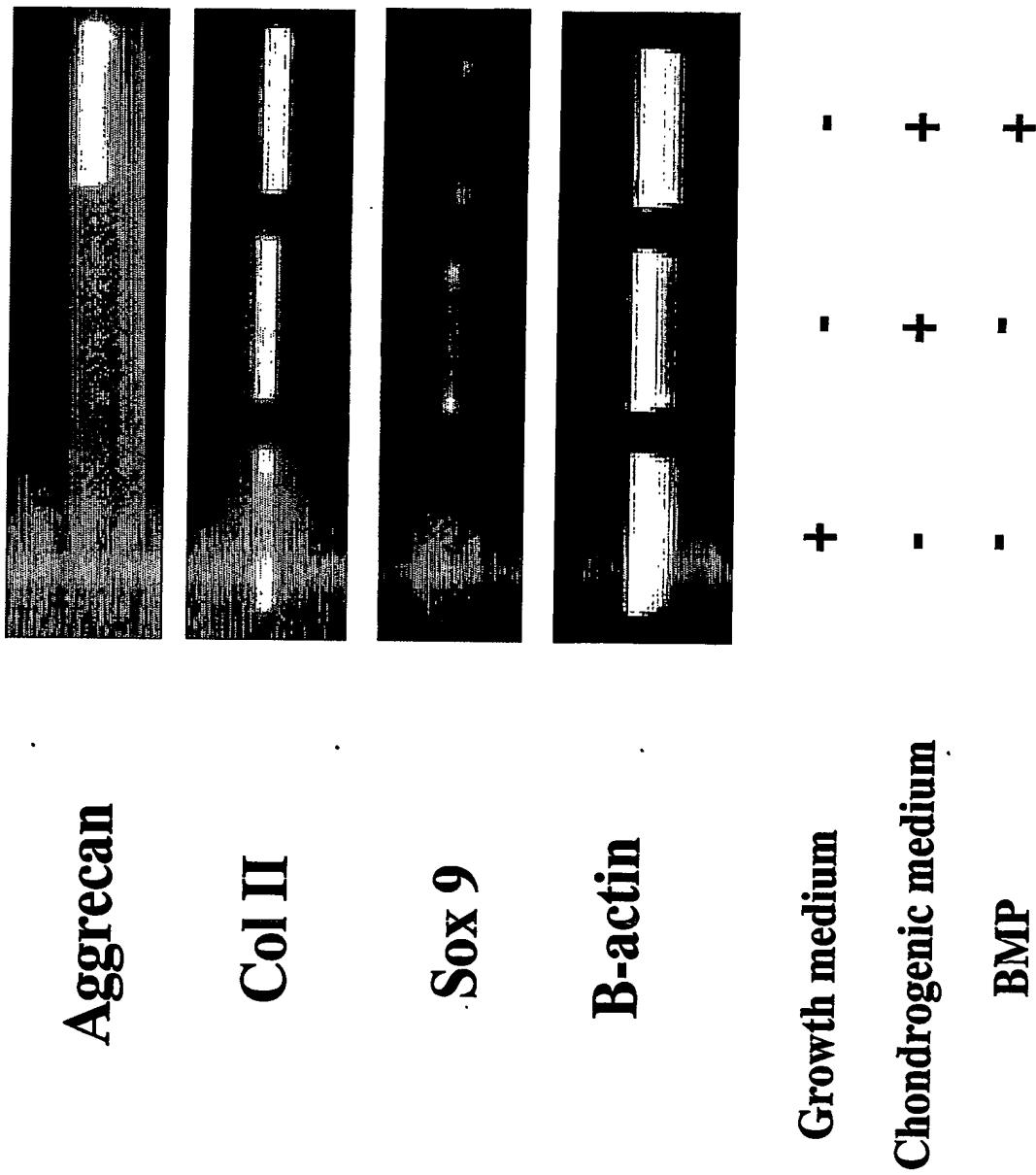


FIG. 22

Aggrecan

Col III

B-actin

Growth medium

Chondrogenic medium

BMP

Synthetic tissue

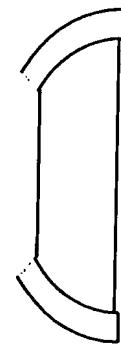
monolayer

1. *On the Nature of the Human Species* (1859) by Charles Darwin
2. *On the Origin of Species by Means of Natural Selection* (1859) by Charles Darwin
3. *Principles of Geology* (1830-1833) by Charles Lyell
4. *On the Volcanoes of the Azores* (1851) by Charles Lyell
5. *On the Volcanoes of the Azores* (1851) by Charles Lyell
6. *On the Volcanoes of the Azores* (1851) by Charles Lyell
7. *On the Volcanoes of the Azores* (1851) by Charles Lyell
8. *On the Volcanoes of the Azores* (1851) by Charles Lyell
9. *On the Volcanoes of the Azores* (1851) by Charles Lyell
10. *On the Volcanoes of the Azores* (1851) by Charles Lyell

FIG.23

remove superficial zone
digested with
chondroitinase ABC

Cultured for
7 days
(Hunziker EB. JBJS 1996)

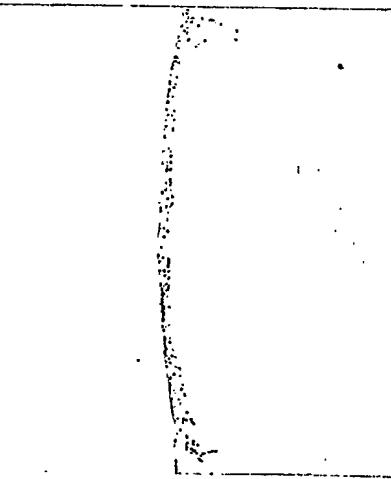


remove superficial zone
digested with
chondroitinase ABC

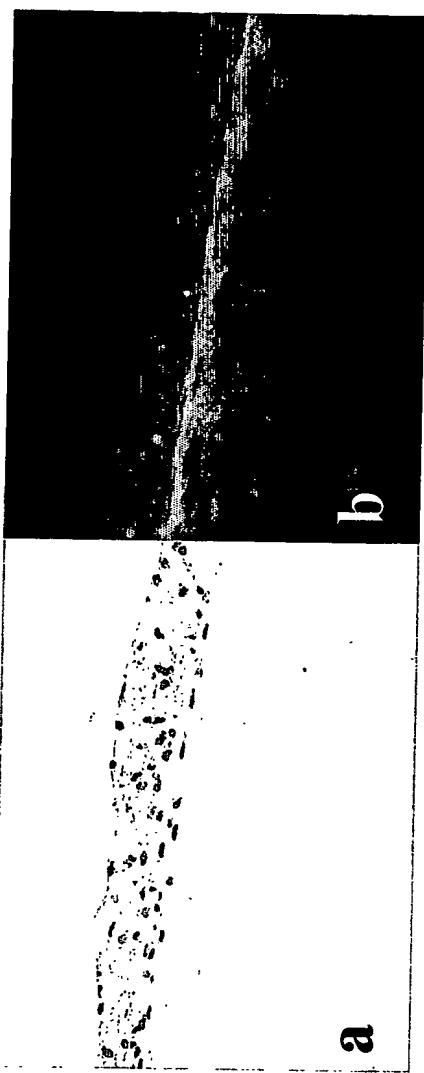
Cultured for
7 days
(Hunziker EB. JBJS 1996)



HE staining
Fibronectin

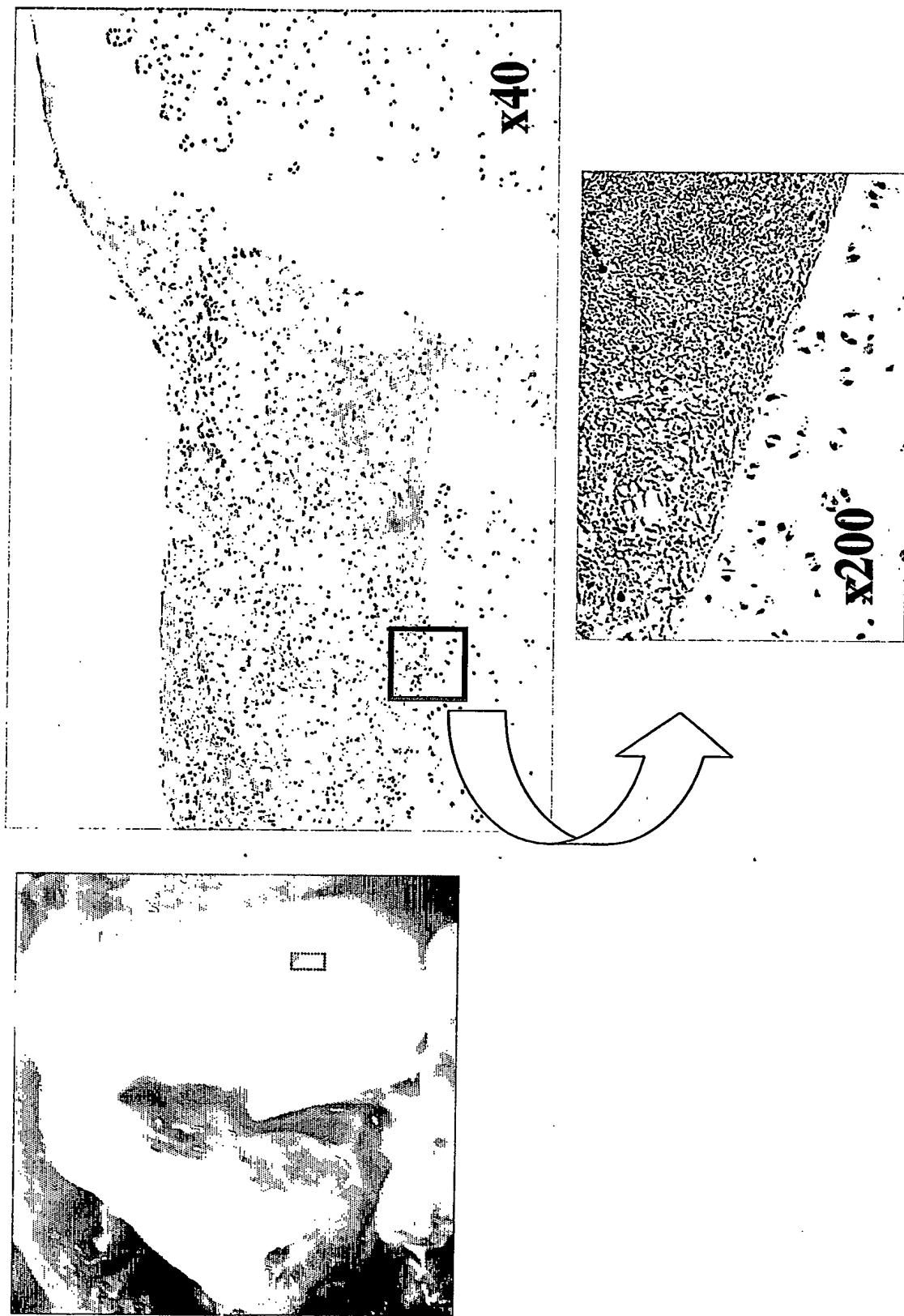


x40



b

x200



25/46

FIG.25

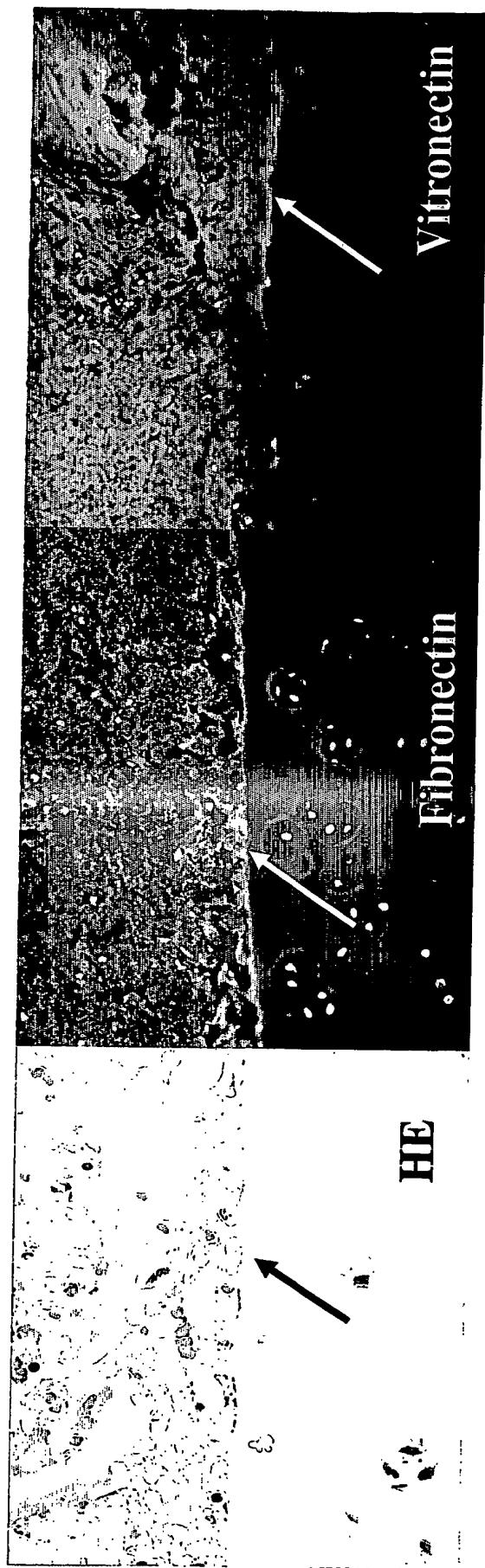


FIG.26



FIG.27

FIG.28

FIG.27

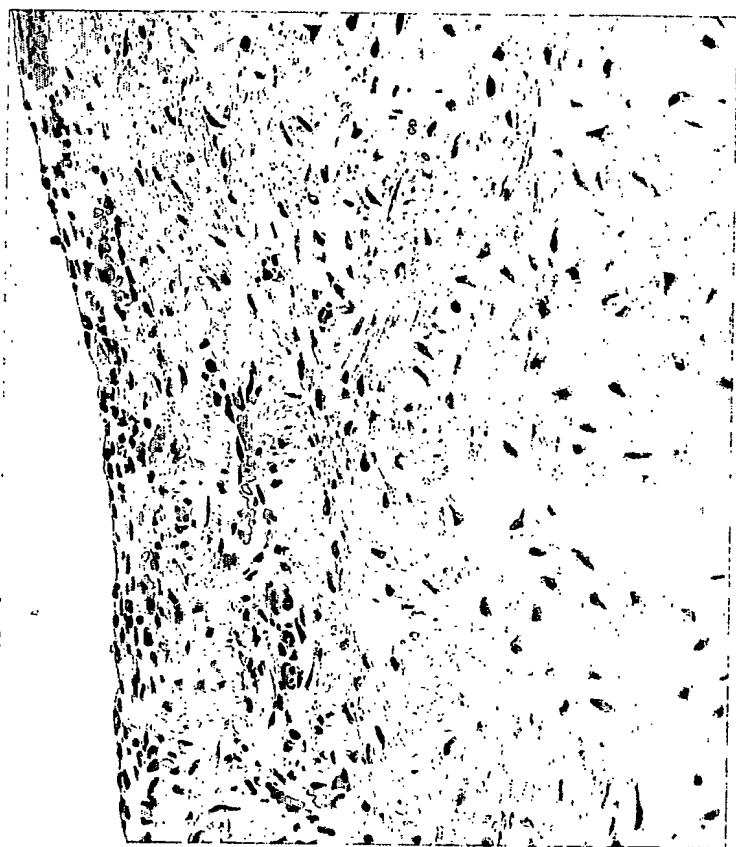


FIG.28

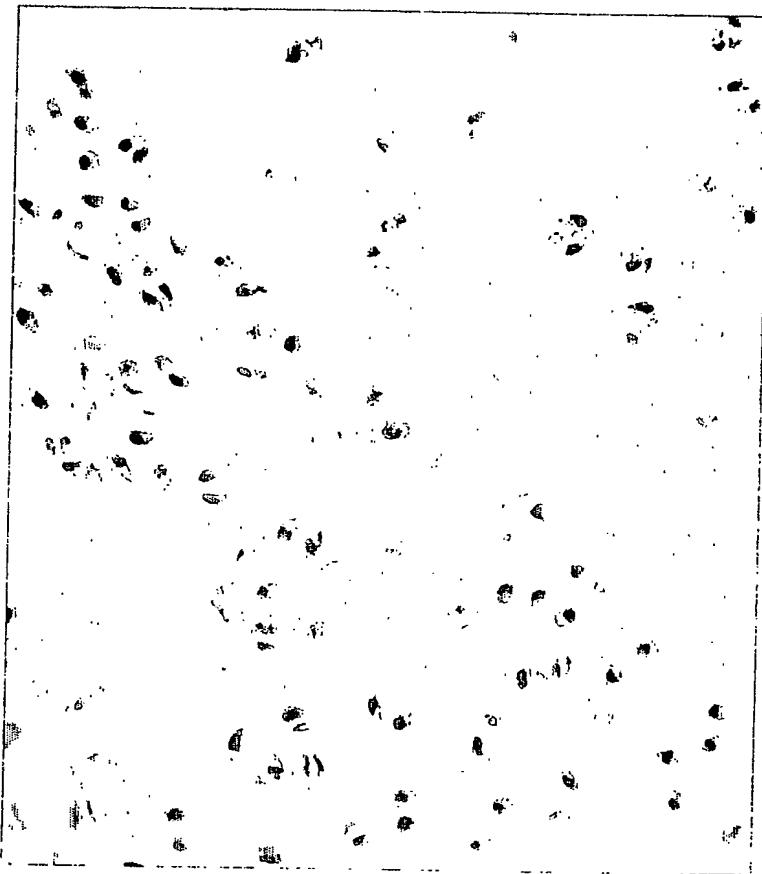


FIG.29



FIG.30



membrana synovialis
derived artificial tissue



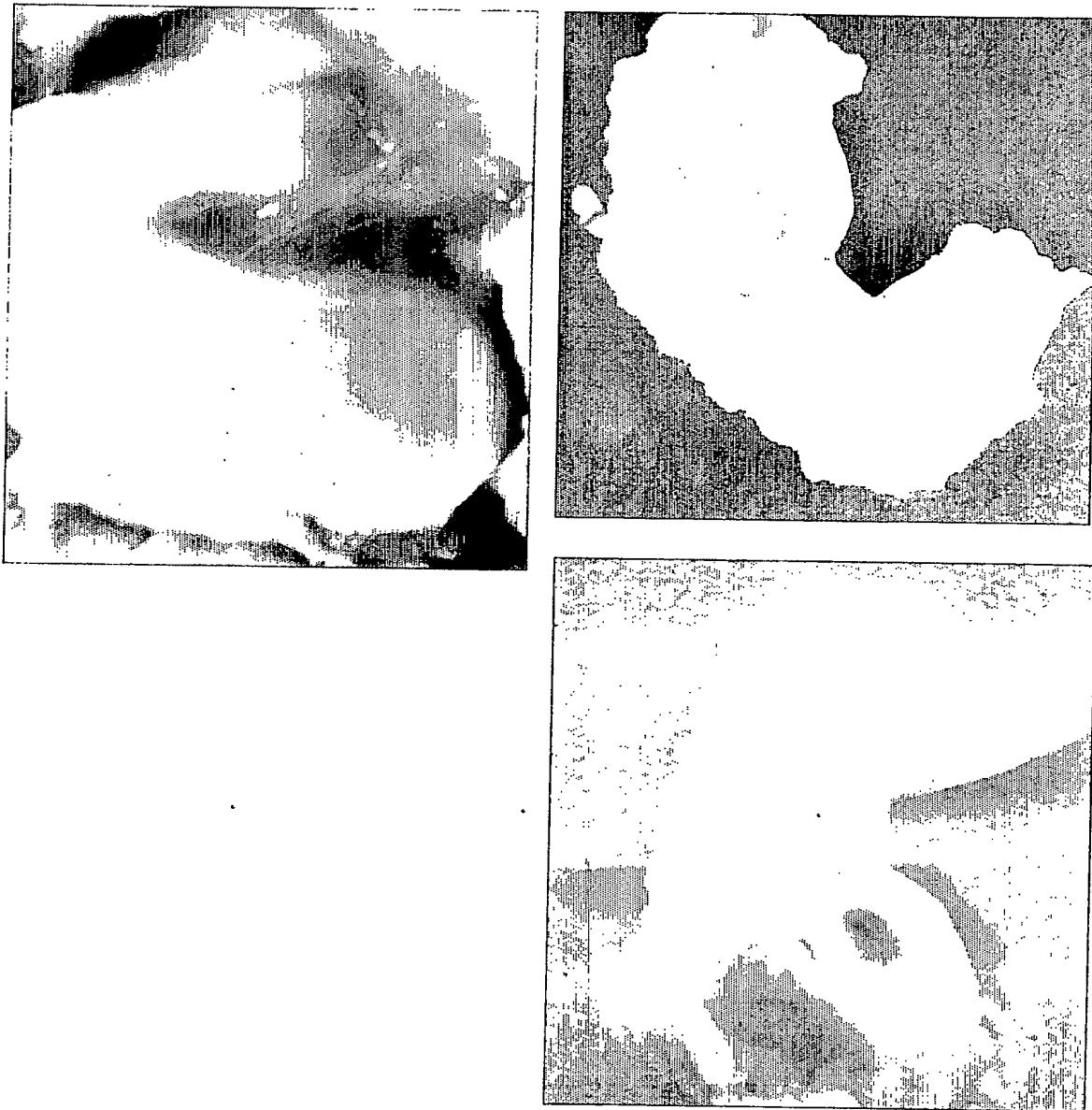
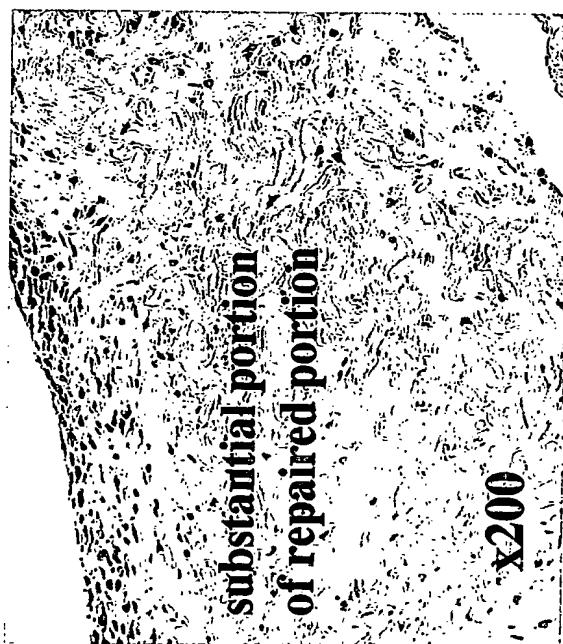
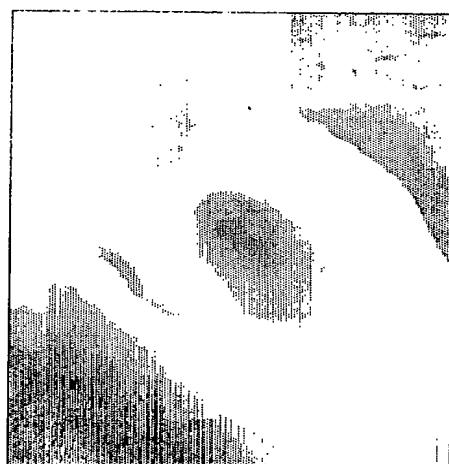


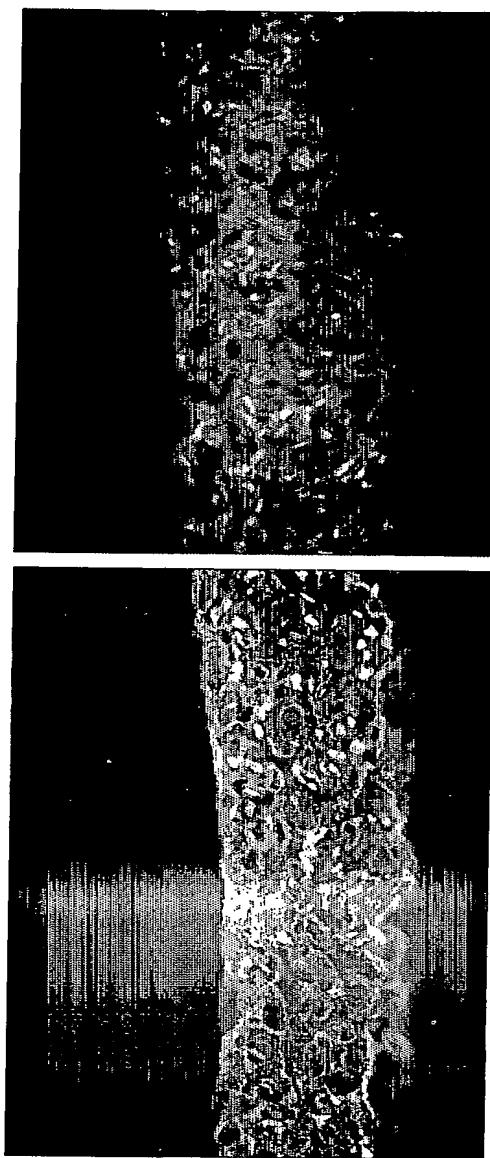
FIG.31



border of adjacent meniscus

FIG.32

FIG.33

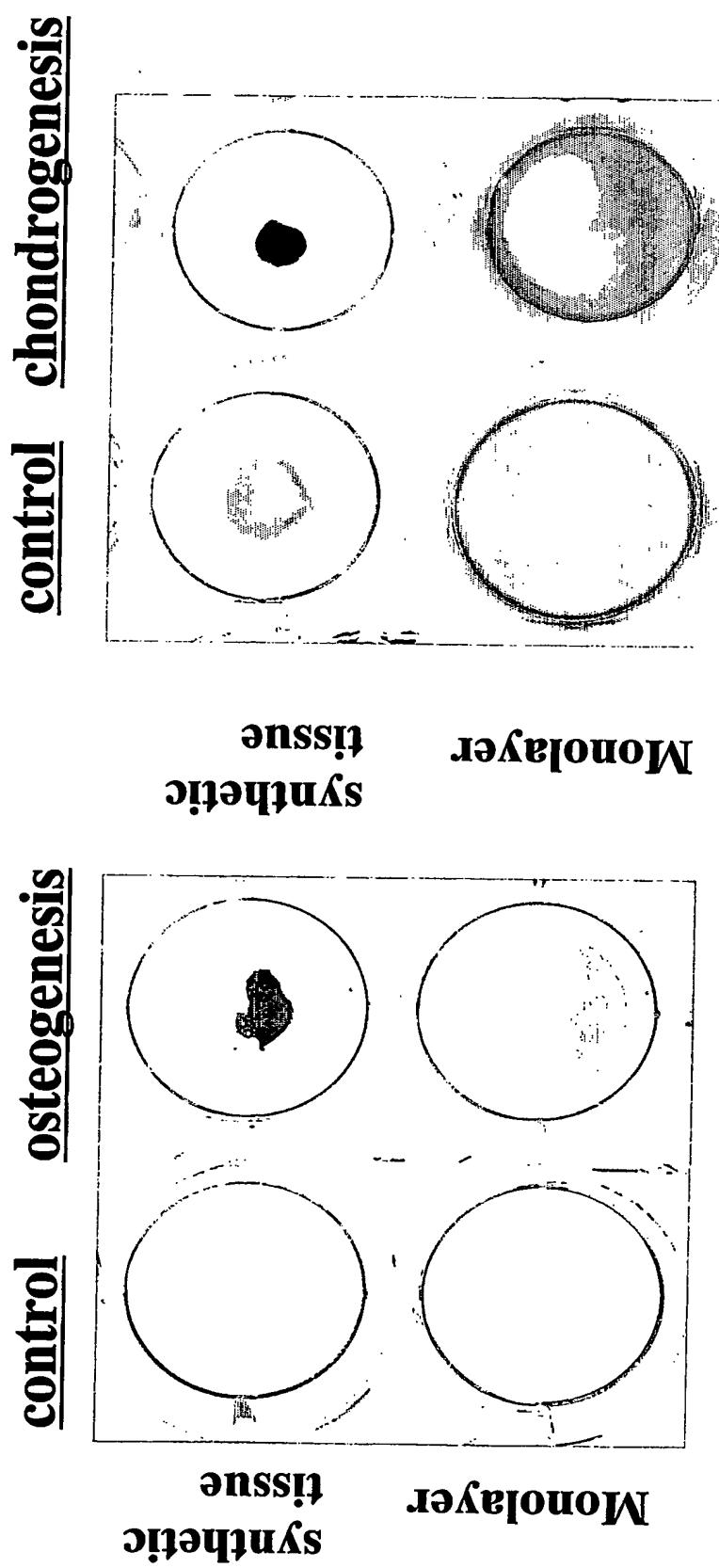


HE staining

Fibronectin

Vitronectin

FIG.34



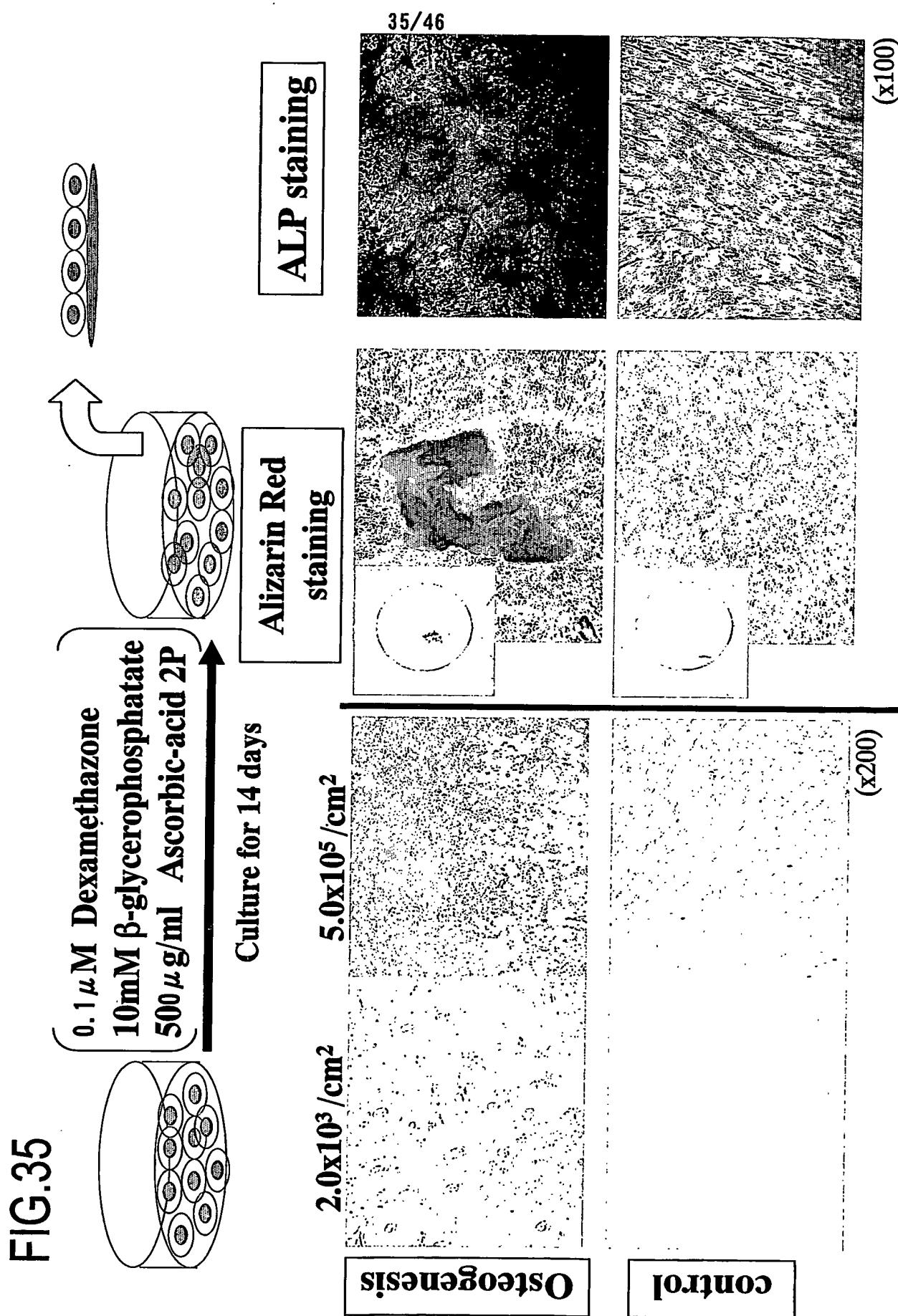


FIG.36

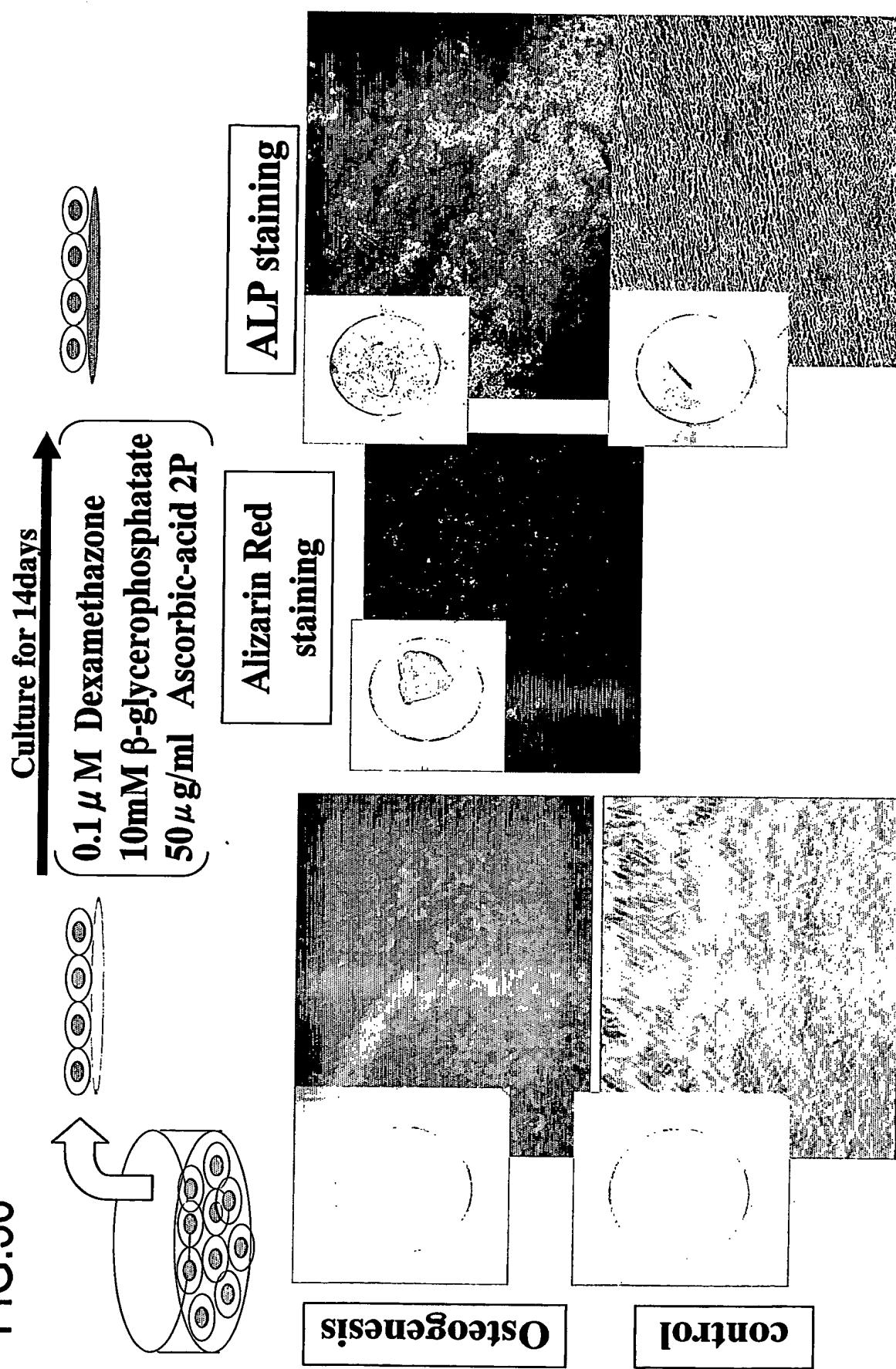


FIG.37



FIG.38



Pre-ope



Post-ope

10days
↑

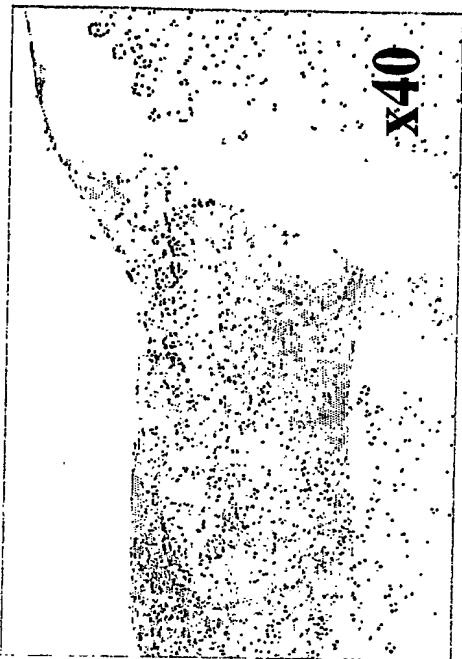


FIG.39

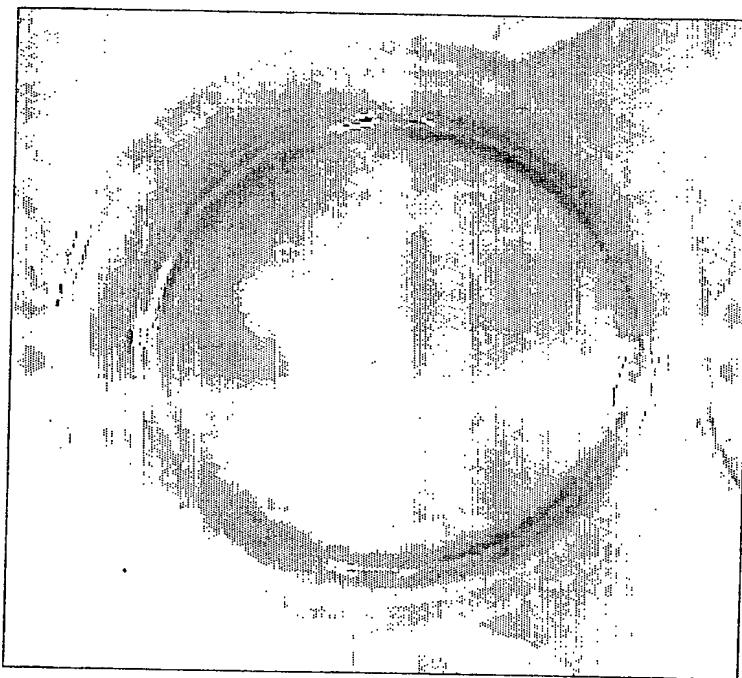


FIG.40

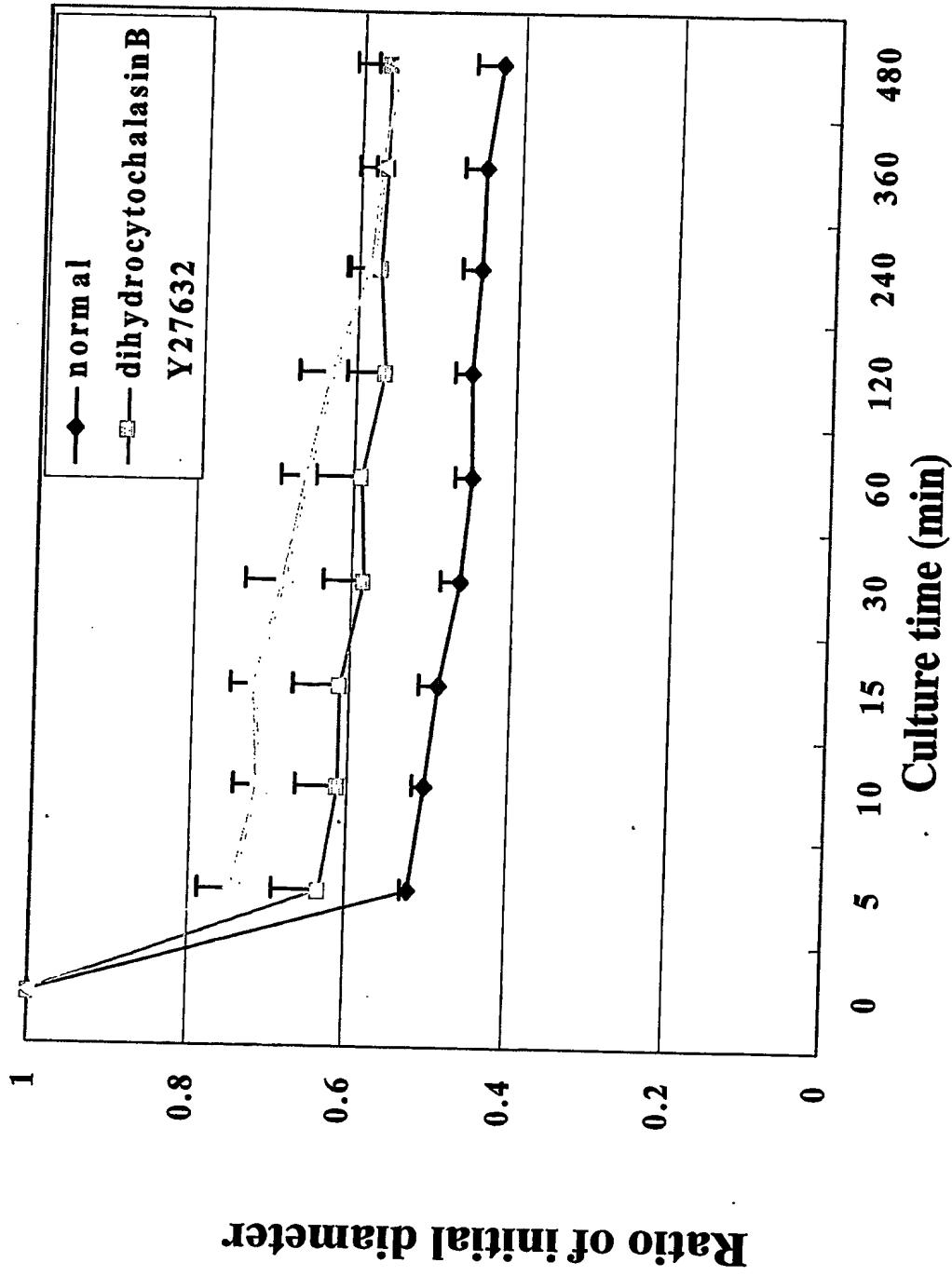


FIG.41

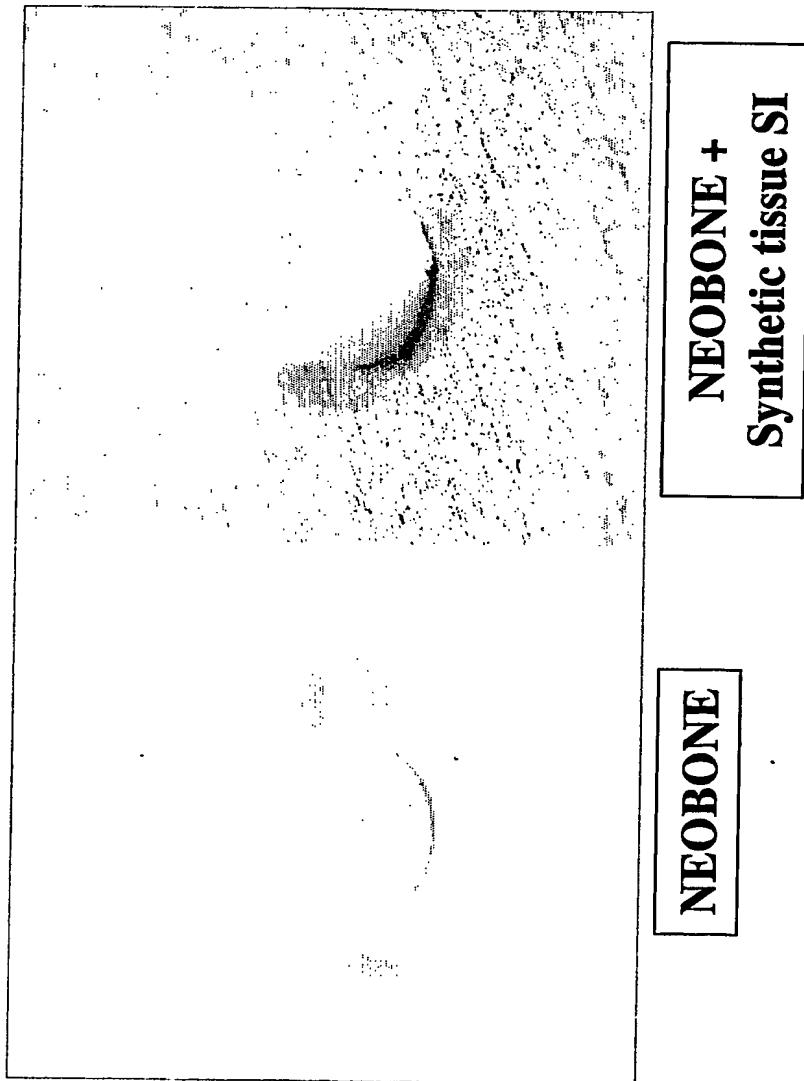


FIG.42

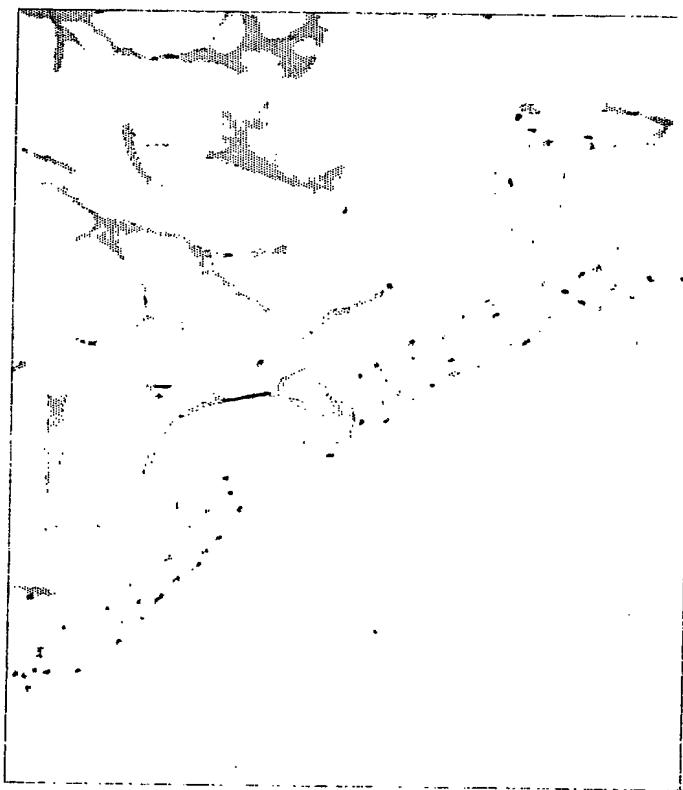


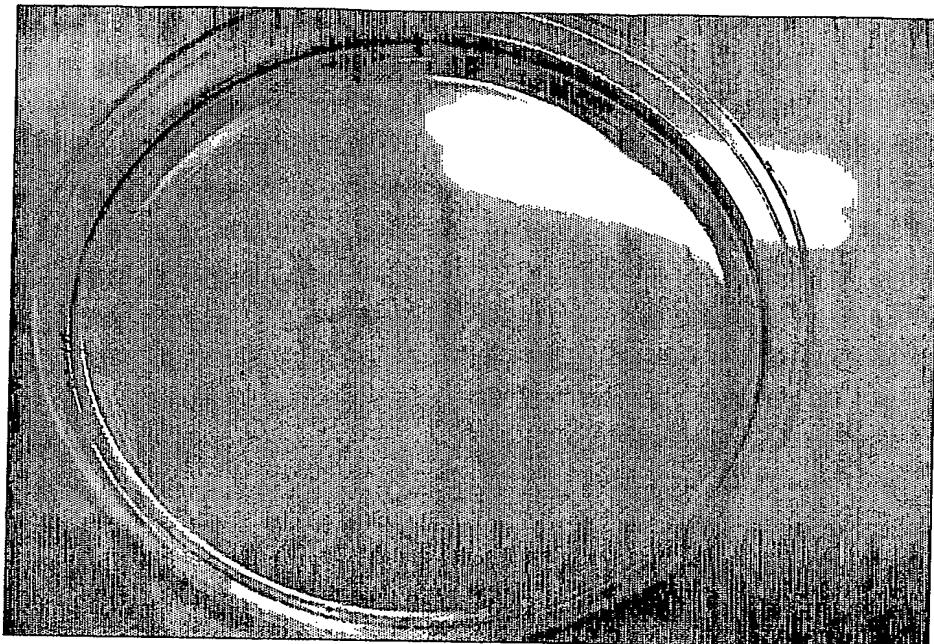
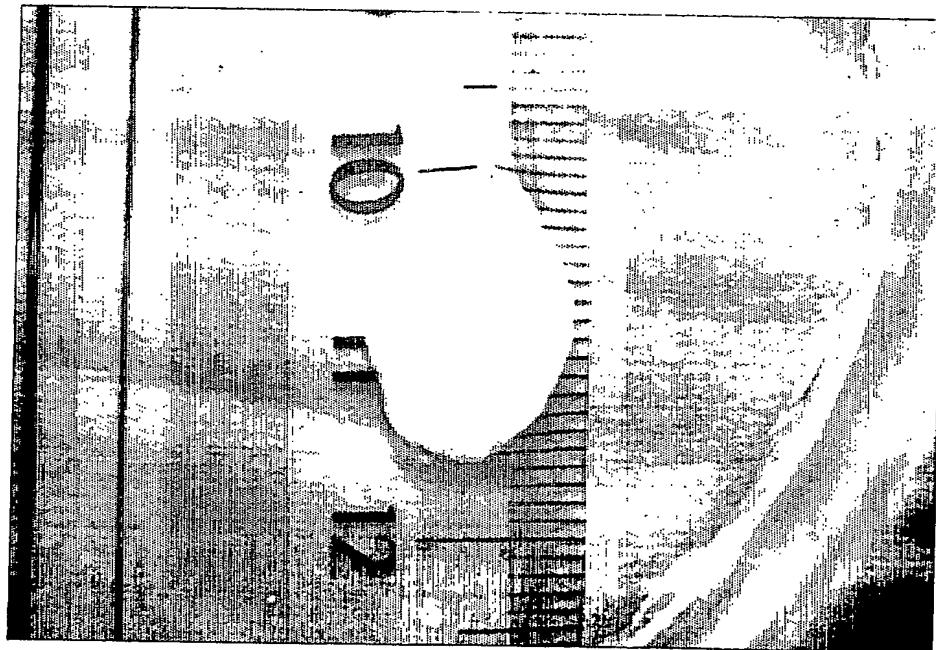
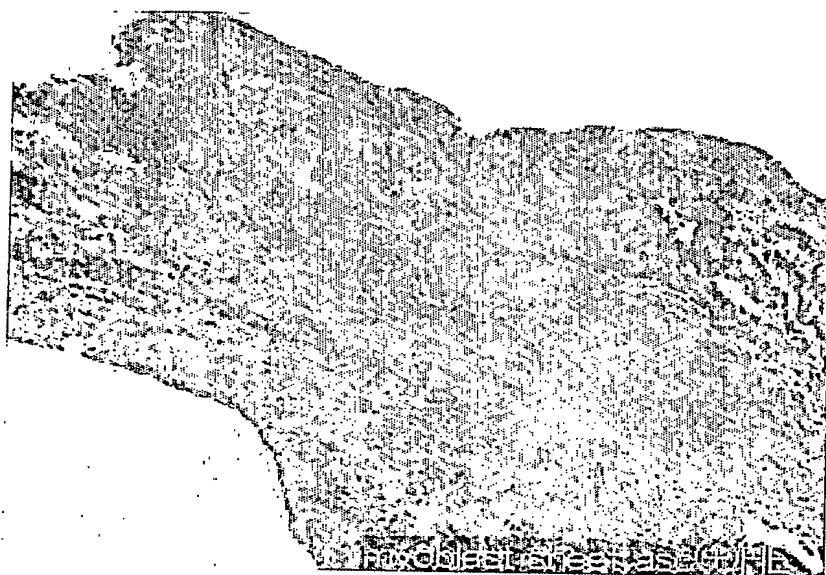
FIG.43**FIG.44**

FIG.45



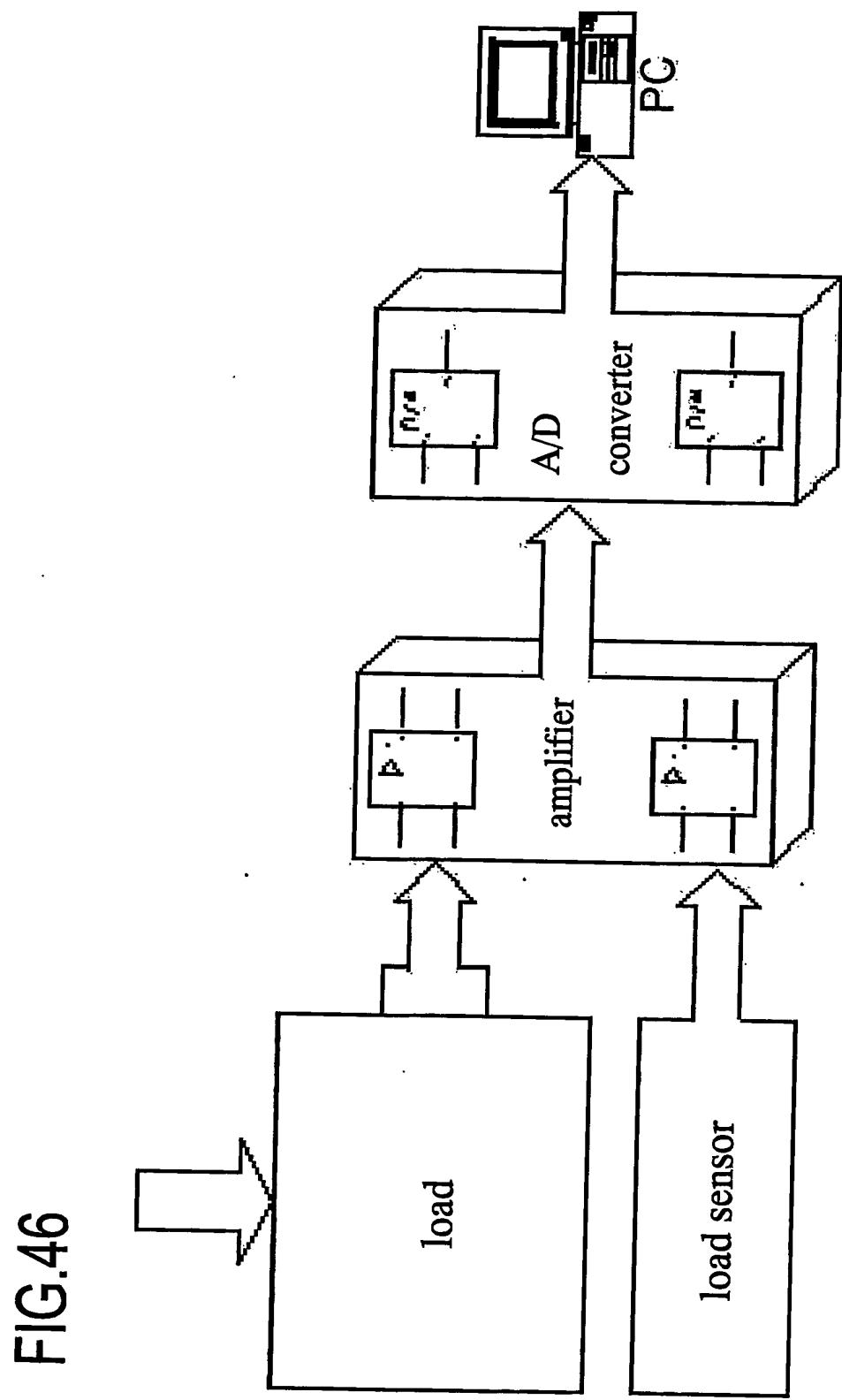
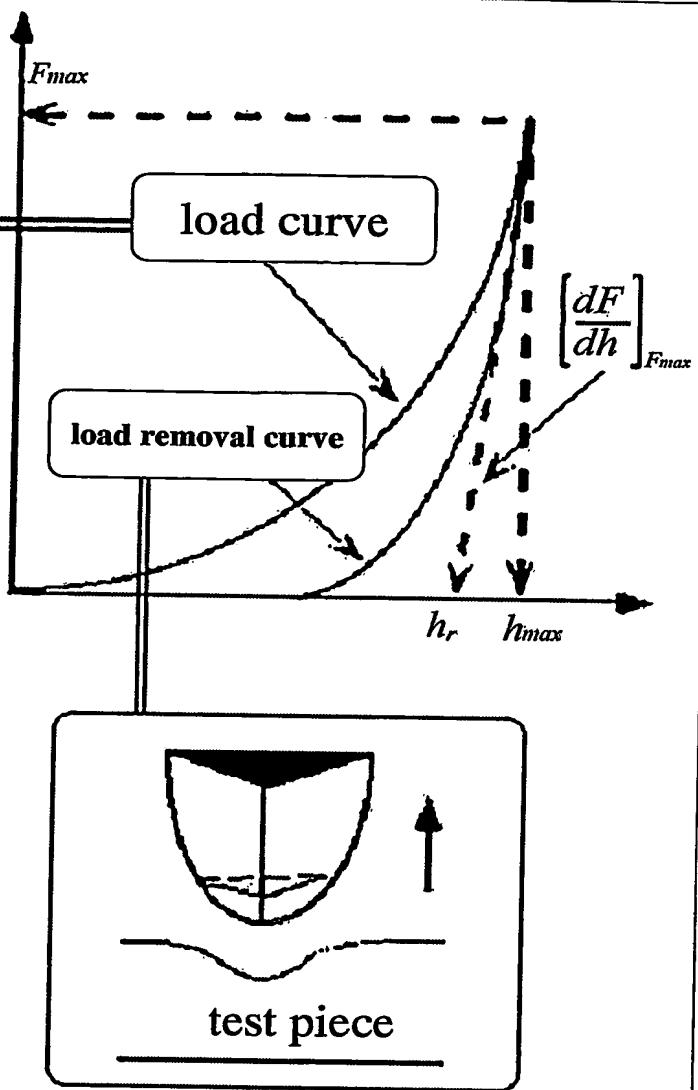
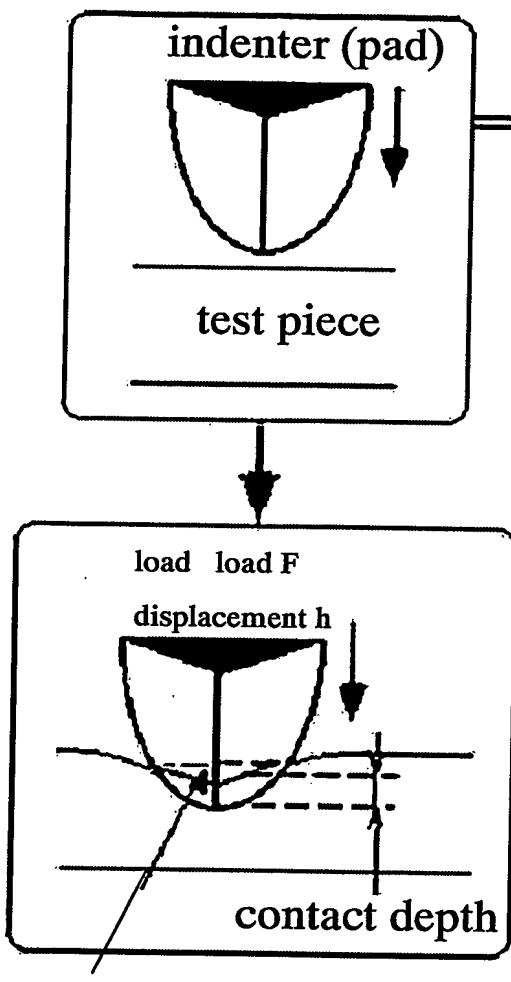


FIG.47

contact
projection A

$$H = \frac{F}{A} = \frac{F}{k_1 h_p^2}$$

$$E = \left[\frac{dF}{dh} \right]_{F_{max}} \frac{1 - \nu^2}{2 \cdot k_2 \cdot h_{pmax}}$$

$$h_p = h_r + 0.25(h_{max} - h_r)$$

F: load**A:** contact projection area**hp:** contact depth**k1k2:** shape conflict**Fmax:** Maximum load**hmax:** Maximum displacement**hr:** point at which tangential line intersects**dF/dh:** Gradient of tangential line of load removal curve**ν :** Poisson's ratio